SONY

DIGITAL VIDEOCASSETTE PLAYER

DNW-A22/A22P

BETACAM SX

MAINTENANCE MANUAL Part 1

1st Edition

Serial No. 10001 and Higher (DNW-A22)

Serial No. 10001 and Higher (DNW-A22P)

⚠警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理など行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

⚠WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l’entretien. Afin de réduire les risques de décharge électrique, d’incendie ou de blessure n’effectuer que les réparations indiquées dans le mode d’emploi à moins d’être qualifié pour en effectuer d’autres. Pour toute réparation faire appel à une personne compétente uniquement.

Attention-when the product is installed in Rack:

1. **Prevention against overloading of branch circuit**
   When this product is installed in a rack and is supplied power from an outlet on the rack, please make sure that the rack does not overload the supply circuit.

2. **Providing protective earth**
   When this product is installed in a rack and is supplied power from an outlet on the rack, please confirm that the outlet is provided with a suitable protective earth connection.

3. **Internal air ambient temperature of the rack**
   When this product is installed in a rack, please make sure that the internal air ambient temperature of the rack is within the specified limit of this product.

4. **Prevention against achieving hazardous condition due to uneven mechanical loading**
   When this product is installed in a rack, please make sure that the rack does not achieve hazardous condition due to uneven mechanical loading.

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Manual Structure

Purpose of this manual

This manual is the maintenance manual part1 of the digital videocassette player DNW-A22/A22P.

This manual is intended for use by trained system and service engineers, and provides the information that is required to install, maintenance information, and the information for service such as replacement of plug-in boards.

Contents

This manual is organized by following sections.

Section 1 Installation
Explains the information that is required to install (environment, connection information, initial setting, etc.) .

Section 2 Service Overview
Explains fundamental area of the information that is required to service , (removal of cabinet and cassette compartment, the functions of printed circuit board, the locations of main part, fixture and measuring equipment information, notes, etc.) , the measures against trouble and ISR (Interactive Status Reporting).

Section 3 Error Message
Explains the error messages.

Section 4 Maintenance Mode
Explains each menu of the maintenance mode.

Section 5 Periodic Maintenance and Inspection
Explains the recommended periodic maintenance, and the cleaning procedure.

Section 6 Replacement of Plug-in Boards
Explains how to replace the plug-in board and how to adjust and check after replacement.

Section 7 Spare Parts
Describes the spare parts list and the exploded view for the service parts of this unit, and the packing materials and supplied accessories list.

Appendix A Setting Check Sheet
The sheet is used for checking the setup conditions such as switch, setup menu under the application.

Appendix B Block Diagrams
Describes the overall block diagrams

Related manuals

Besides this “Maintenance manual part 1”, the following manuals are available for digital videocassette player DNW-A22/A22P.

- **Operation Manual Part 1 (Supplied with this unit.)**
  This manual is necessary for application and operation (and installation) of this unit.

- **Maintenance Manual Part 2 (available on request)**
  This manual describes the information that premises the parts level service (adjustments, board layouts, schematic diagrams, detailed parts list, etc.) for this unit.
  If this manual is required, please contact to Sony’s service organization.

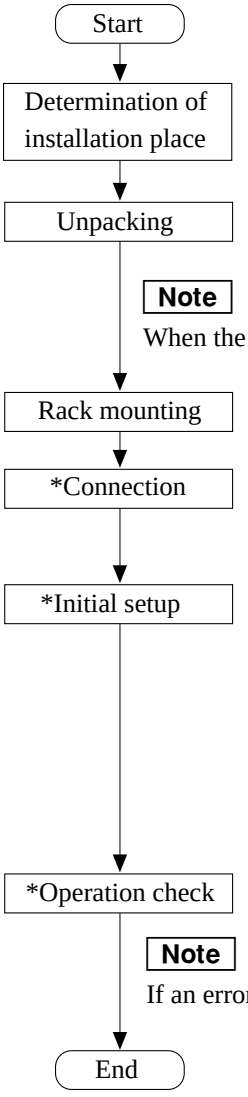
Section 1
Installation

1-1. Installation Procedure

Installation procedure of this unit is shown on the following flowchart.
Refer to each section about detail of each flow.
The operation manual is also reqruired to do ∗- marked items.

1-2. Supplied Accessories

Screws for rack mounting (PSW 4 × 16) 4
Operation manual 1
Maintenance manual (Part 1) 1



1-3. Operating Conditions
1-4. Power Supply
1-5. Installation Space

Note

When the unit is transported, it is required to pack the unit into the specified packing materials.

1-6. Rack Mounting

1-7. Connecting Connectors and Cables
1-8. Signal Inputs and Outputs

1-9. Switch and Shorting Plug Setting on PC Boards
1-10. Mode Switching of Search Dial
1-11. Setup Menu Items
1-12. Switching between 525/625 Line Systems

Note

If an error message is shown on the time counter, refer to “Section 3. Error Message”.

1-3. Operating Conditions

CAUTION

Good air circulaiton is essential to prevent internal heat build-up. Place the unit in location with sufficient air circulation.
Do not block the ventilation holes of the cabinet and the front and rear panels.

Operating temperature: 5˚C to 40˚C
Operating humidity: 25 % to 80 %
(Condensation not allowed)
Storage temperature: −20˚C to 60˚C
Locations to avoid:

- Areas where the unit will be exposed to direct sunlight of any other strong lights.
- Areas near heat sources.
- Dusty areas or areas subject to vibration.
- Areas with strong magnetic field.
- Areas with much electrical noise.
- Areas with much static electricity.
- Areas that is impossible to find a specified room for installation.
  (Refer to “1-5. Installation Space” on page 1-3.)
- Areas windtight.

Horizonal condition: Do not slant the front or rear of the unit more than 30˚.

CAUTION

Fix the unit securely to avoid slipping if the unit is not operated at horizonal place.

1-4. Power Supply

1-4-1. Voltage and Power Requirements

WARNING

Be sure to operate the unit within the range of following power voltage.

Power voltage: AC 100 to 240 V ±10 %
Power frequency: 50 Hz or 60 Hz
Power consumption: 190 W (190 VA)
Rush current: Power voltage 100 V IN; 10 A
Power voltage 240 V IN; 20 A

This unit’s power line has a switching regulator with the power factor 98%.

Note

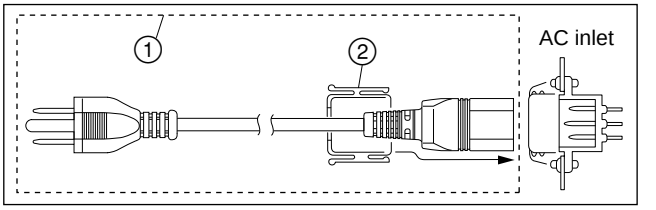
AC power supply is repuired a capacity which is commensurate with rush current.
If the capacity of the AC power supply is not enough, the breaker of AC power of a supply side may operate or this unit may not operate normally.

1-4-2. Power Cord

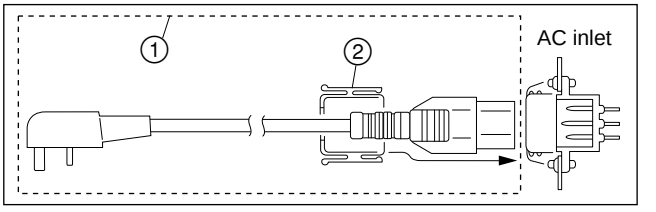
WARNING

Use the specified power cord only when connecting.
Never use a injured power cord.

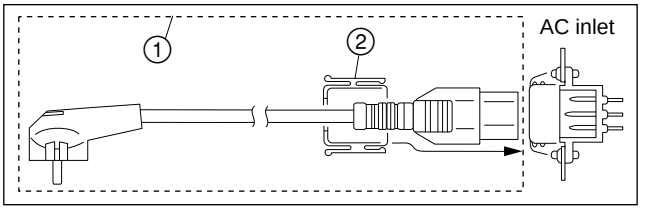
Power cord for the customer in the U.S.A. and Canada.
①DK-2401(UC) (approx. 2.4 m)
② Plug holder (Black) 2-990-242-01
Plug holder is included in DK-2401(UC).



Power cord for the customer in the United Kingdom.
①DK-2401(UK) (approx. 2.4 m)
② Plug holder (Black) 2-990-242-01
Plug holder is included in DK-2401(UK).



Power cord for the customer in Europe except the United Kingdom.
①DK-2401(AE) (approx. 2.4 m)
② Plug holder (Black) 2-990-242-01
Plug holder is included in DK-2401(AE).



If the unit is used in the area except above, please consult with local Sony's sales/service office.

1-5. Installation Space

When installing, the installation space must be secured in consideration of the ventilation and service operation.

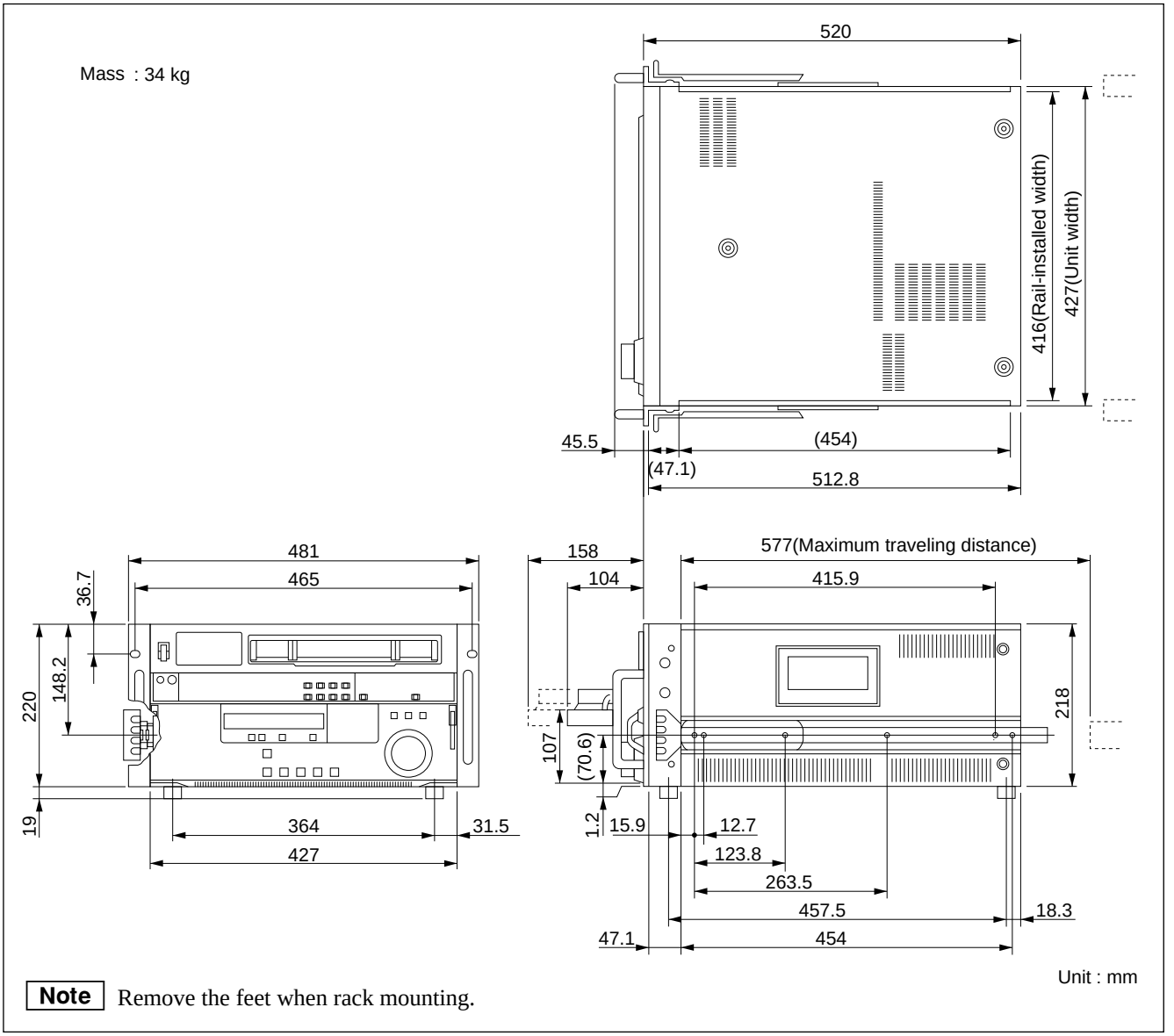
- Do not block ventilation (upper lid, right side panel, lower portion of front panel and bottom plate) and exhaust part.
- Leave a space around the unit for ventilation.
- Leave a space more than 40 cm at the rear side of the unit to secure the operation area.

When the unit is installed on the desk or similar condition, assure that the clearance at the upper and right sides is at least 4 cm. However, it is recommended that the clearance above the unit is more than 40 cm in consideration of the service operation.

When the unit is mounted in the rack, leave a space on the top and bottom of this unit by 1U.
Moreover, an air flow that is effective in cooling the unit is essential. If the ventilation is not enough, the unit may be damaged because an increase of the internal temperature of the unit can not reduce.

Note

This unit is air-cooled by four fans. However for the operation with the upper lid removed, the air cooling effect using the fan decreases. Complete the work in a short time as far as possible when the unit is operated for inspection with the upper lid removed. Blow a wind using an electric fan so as to suppress an increase in temperature when the work is continued for a long time with the power turned on.



Note Remove the feet when rack mounting.

Dimensions when Rack-Mounting

1-6. Rack Mounting

Explains how to mount this unit in a 19-inch standard rack. Install this unit in a rack accurately as following procedure using specified rack mount rail.
If not, there is a fear of unexpected accident such as a drop of the unit or turnover of the rack.

CAUTIONS

- Use the specified rack mount rail.
  If not, injury could occur by drop of the unit because strength of rail is not enough.
- To prevent turning over the rack, fix the rack on the horizonal and firm floor securly using the bolts.
- Adjust so that the temperature inside the rack is in the range of the unit's operating temperature.
- To reduce an increase in the internal temperature of this unit, leave each space on the top and bottom of this unit by 1U.
- Never remove the upper lid, bottom plate, and so on during rack mounting.

Note

Connect long enough cables on the connector panel, considering that the unit is pulled out from the rack.

Specified Rack Mount Kit

RMM-111 (Option) or
RMM-110 (Option)

Note

The color of rack angle of RMM-111 fits to the unit.
RMM-110 is the same consistance, strength and dimension as RMM-111, but the color of rack angle is different.

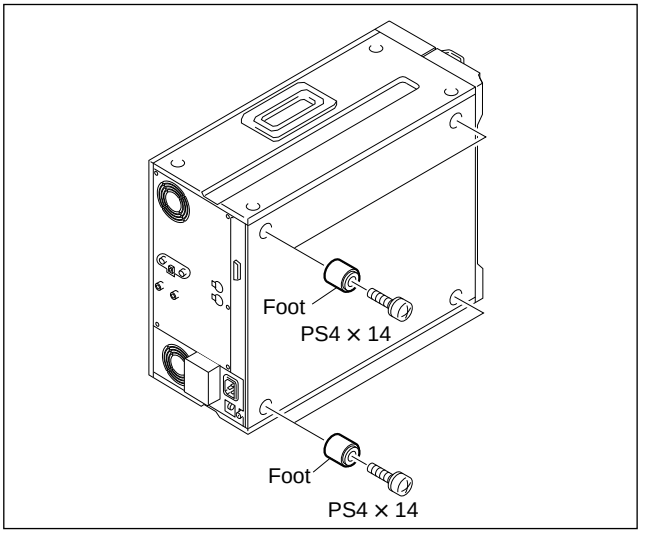
Parts Packed in RMM-110/111

- Slide rails 2
- Rack angles (handle) 2
- Rail brackets 4
- Plate nuts (large) 4
- Plate nuts (small) 4
- Screws (PSW4 × 16) 4
- Screws (B4 × 8) 8
- Hexagon socket head cap screws 8
- Flat washers 8
- Screws (RK5 × 14) 2
- Ornamental washers 2
- L-shaped hexagon wrench 1

Rack Mounting Procedure

- **Remove of feet**

(1) Place the unit on its right side panel down.
Note
Lend your hand so that the lower handle does not hang down.
(2) Unscrew the four screws and remove the feet from the bottom plate of the unit.
(3) Replace the unit to the horizonal position.



CAUTION

Keep these screws and the feet that are removed in this procedure carefully.
Tighting torque: 98×10^{-2} N • m {10 kgf • cm}

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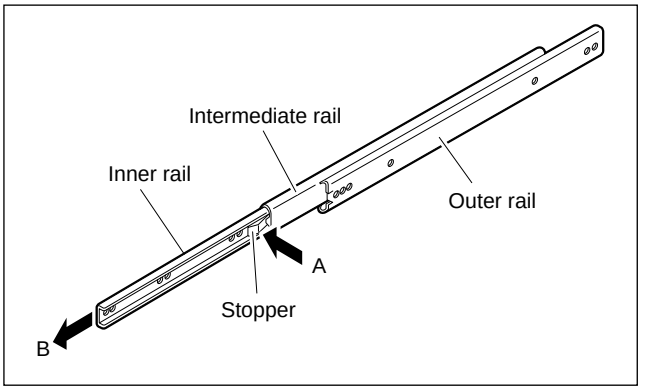
• Attachment of inner rails

(4) Pull out the inner rails from the two intermediate rails.

(5) While pressing the stopper of the inner rail in the direction of the arrow A in the figure, pull out it in the direction of the arrow B. (Pull out the other inner rail in the same way.)

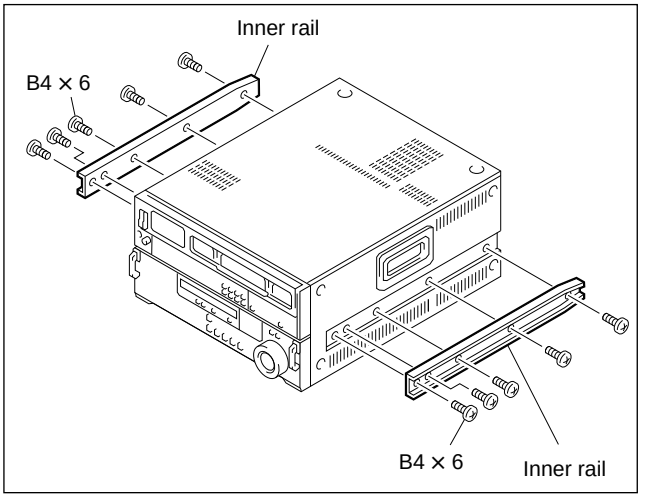


(6) Remove the ten screws from both sides (left and right) of the unit shown in the figure.

(7) Attach the two inner rails to both sides (left and right) of the unit using the screws removed in the procedure (6).
Tighting torque: 120 × 10^{-2} N • m {12.2 kgf • cm}

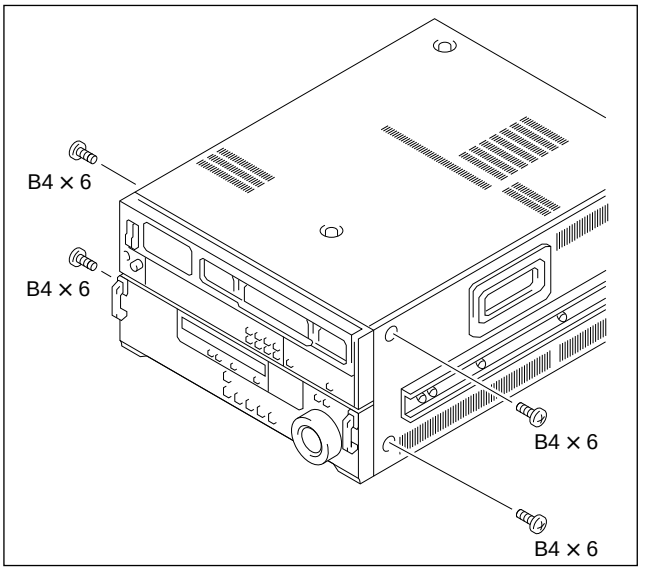
Note

Be sure to attach the inner rail using the screws (B4 × 6). If other screws are used, a failure occurs in the operation of the unit.



• Attachment of rack angles (handles)

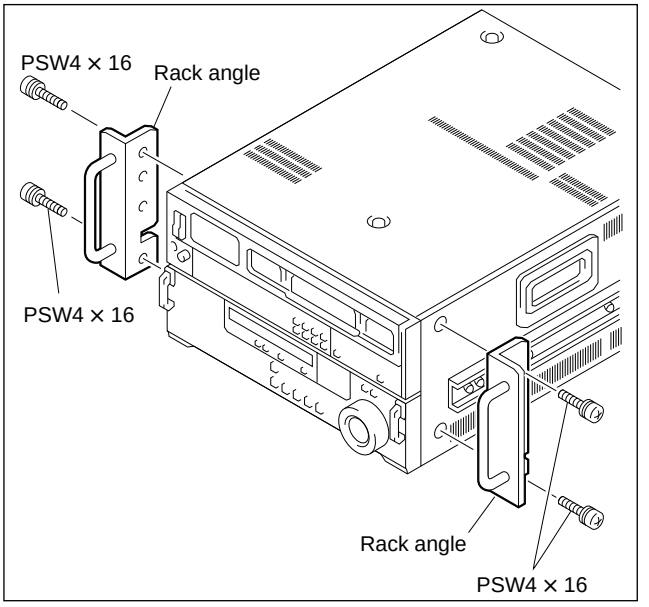
(8) Remove the four screws (B4 × 6) in the figure from both sides (left and right) of the unit.



Note

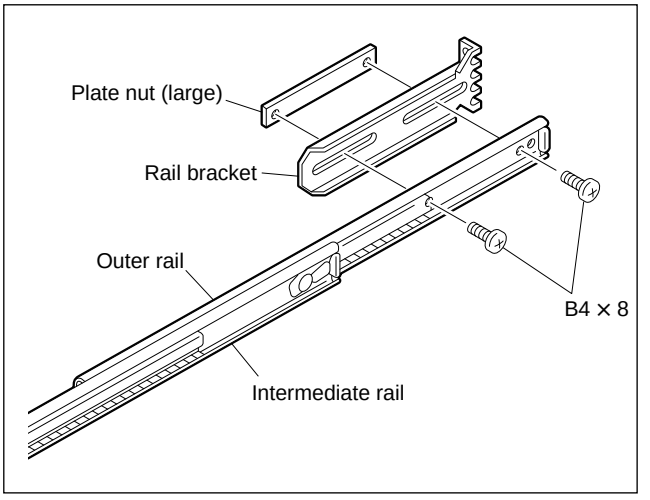
Keep these screws (B4 × 6) that are removed in the procedure (8) carefully.
Be sure to use these screws when directly attaching the side panels by screws after removing the rack angles.
If the rack angle fixing screws (PSW4 × 16) are used by mistake, a failure occurs in the operation of the unit because they are longer than the (B4 × 6) screws.

(9) Attach the two rack angles to both sides (left and right) of the unit using the four screws (PSW 4 × 16) supplied with the rack mount kit.
Tighting torque: 120 × 10^{-2} N • m {12.2 kgf • cm}

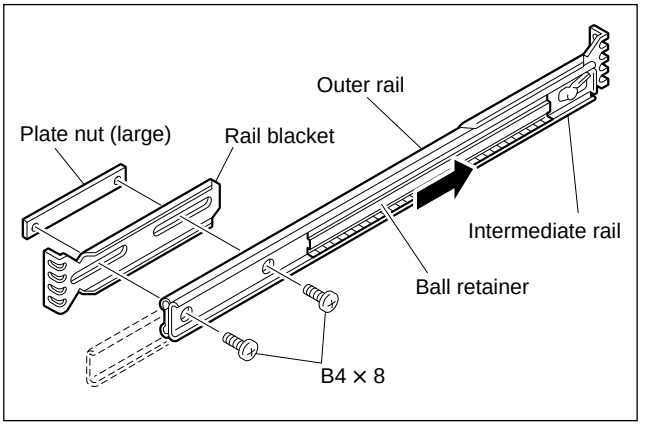


• Temporary attachment of rail brackets

(10)Stagger the outer rail and the intermediate rail as shown in the figure. And attach the rail bracket to the outer rail temporarily using the plate nuts (large) and the two screws. (Attach the rail bracket to the other outer rail temporarily in the same way.)



(11)Stagger the ball retainer as shown in the figure . And attach the rail bracket to the outer rail temporarily using the plate nuts (large) and the two screws. (Attach the rail bracket to the other outer rail temporarily in the same way.)

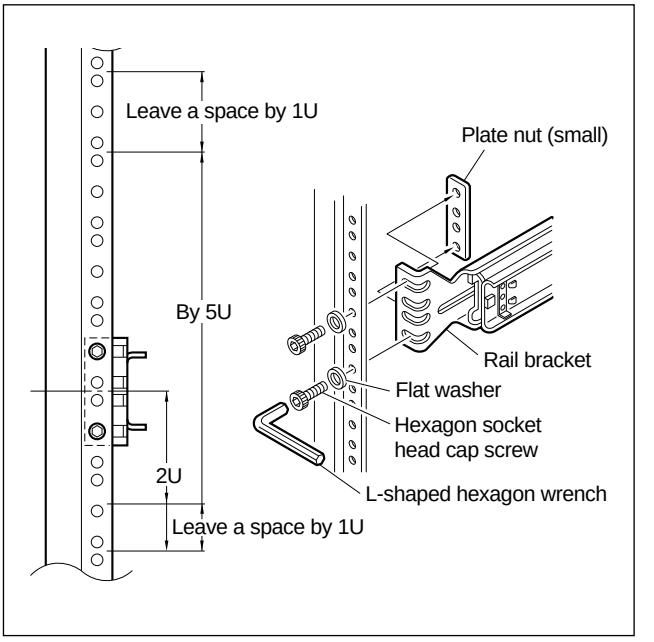


• Attachment of outer rails

(12)As shown in the figure, fix the outer rails on both sides (left and right) temporarily to the 2U position from the bottom of the space by 5U for installing this unit, with eight hexagon socket head cap screws and eight flat washers (front and rear, and right and left positions).

CAUTION

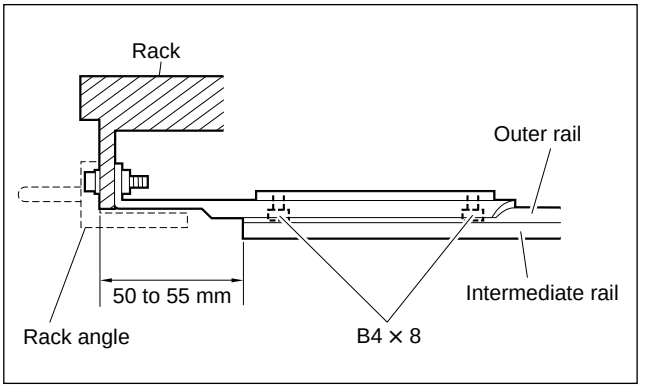
Leave each space on the top and bottom of this unit by 1U to reduce an increase in the internal temperature of this unit.



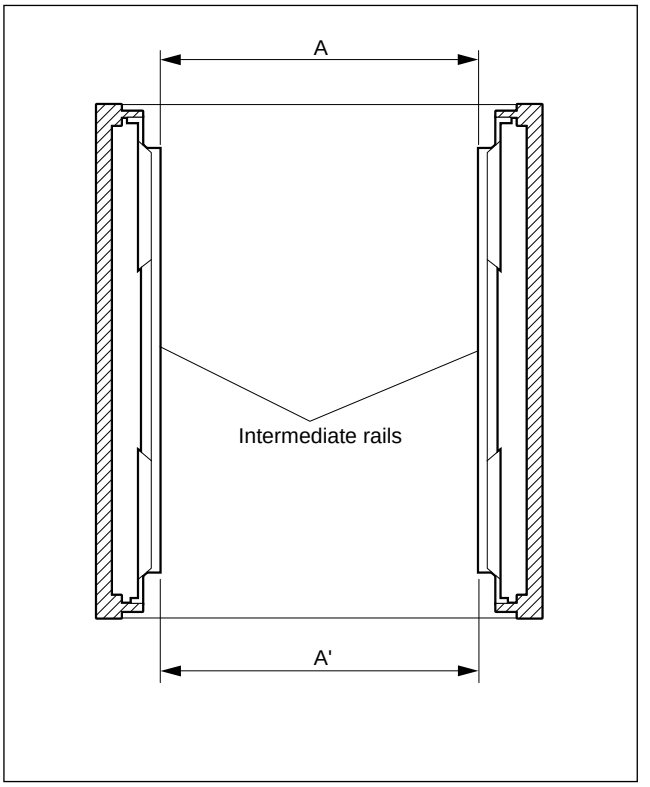
(13)Adjust the position of rails on both sides (left and right) so that the distance from the surface of the rack to the tip of the rail become 50 to 55 mm.

(14)Tighten the screws (four positions, total eight) attaching the rail bracket temporariry using the following tighting torque.

Tighting torque: 120×10^{-2} N • m {12.2 kgf • cm}



(15)Be sure that the distance between the intermediate rails on both sides (left and right) satisfy the specifications.



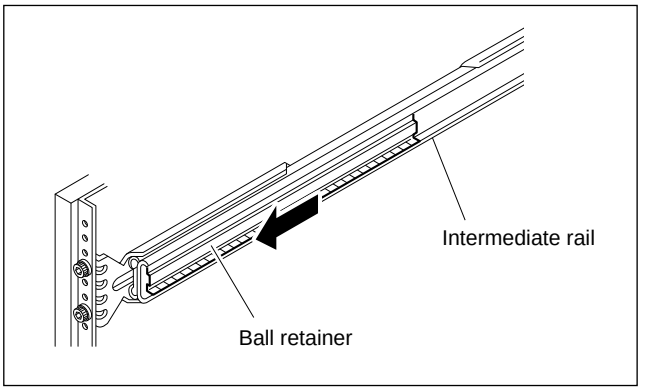
(16)Tighten the hexagon socket head cap screws (four positions, total eight) attaching the outer rails to the rack temporarily using the L-shaped hexagon wrench.

• Mounting in rack

CAUTION

Have two or more persons to do this work.

(17)Stagger the ball retainers of intermediate rails on both sides (left and right) toward you.



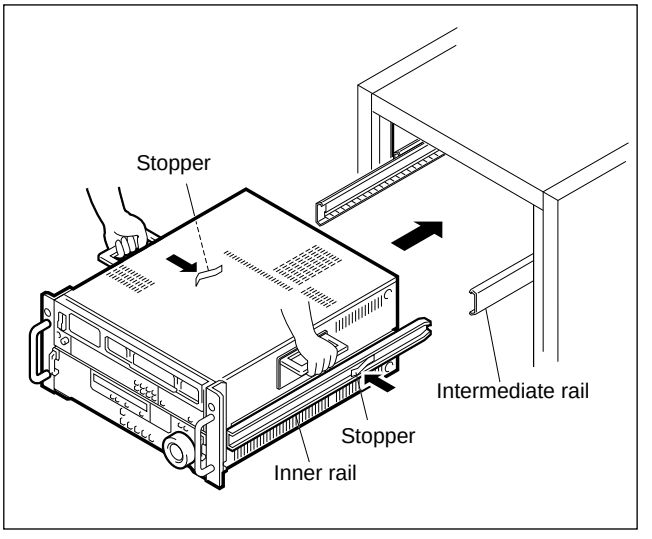
(18)Pull the rails out equal length from both sides (left and right) .

(19)Lift the unit holding the handles, insert the inner rails into the intermediate rails slowly.

(20)While pressing the stoppers on the both sides (left and right) , push the unit into the rack slowly.

CAUTION

Be careful not to catch your finger or hand in rack mount rail.

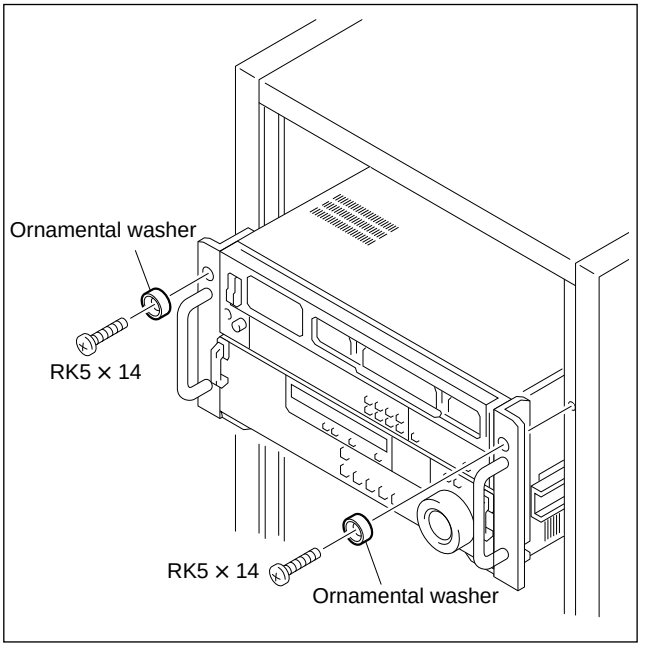


(21)Take the unit in and out from the rack about three times and be sure that slide rail moves smoothly.
If slide rail does not move smoothly, remove the unit and go back to “Attachment of outer rails” (procedure12).

CAUTIONS

- Have two or more persons to remove.
- This unit does not have the feet in this operation. When you put down this unit from the rack, be careful not to give a shock to it.

(22)Fix the unit to the rack using two screws and two ornamental washers.
Tighting torque: 120×10^{-2} N • m {12.2 kgf • cm}



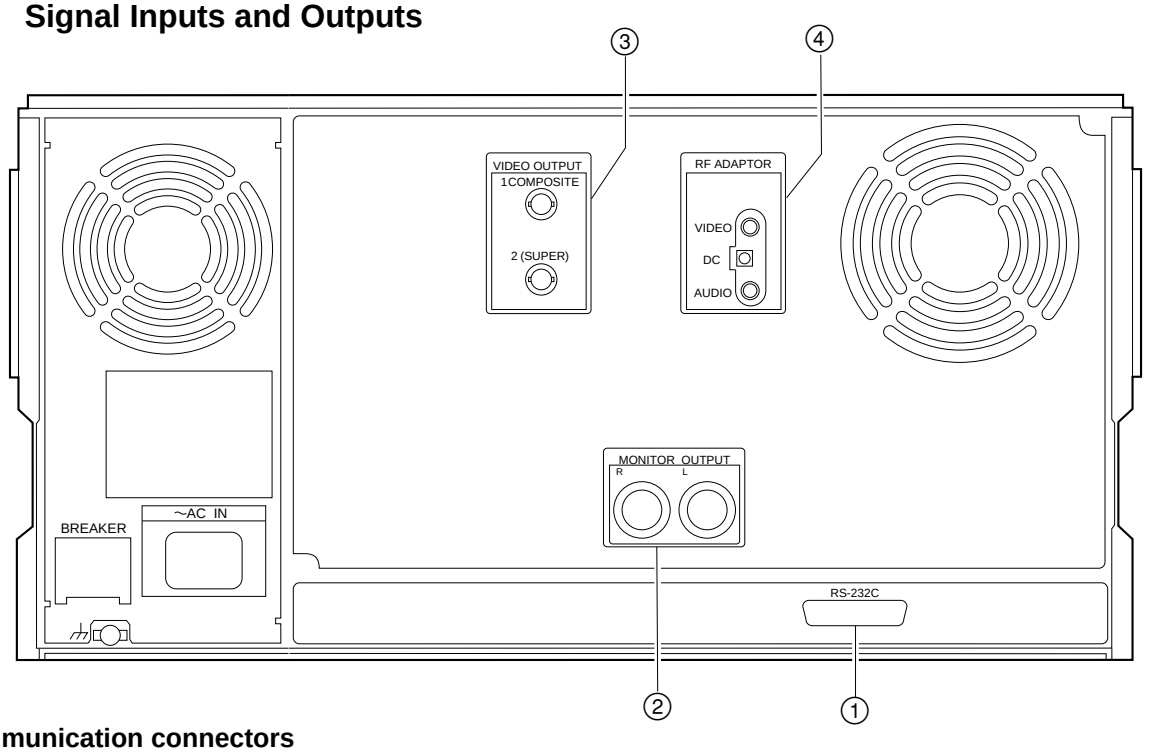
1-7. Connecting Connectors and Cables

When external cables are connected to the connector of this unit, the hardware listed below (or the equivalents) must be used.

DNW side connector/ panel indication	Maching connector/cable	Sony part No.
VIDEO OUTPUT	BNC 75Ω, MALE	–
MONITOR OUTPUT	XLR 3P, FEMALE	1-508-083-00
RS-232C	D-SUB 25P, MALE	1-566-356-11
PHONE (Note1	JM-60 stereo phone plug	–
RFU OUT VIDEO	RFU adaptor AV cable	–

Note 1: It exsists on the front (upper control panel) .

1-8. Signal Inputs and Outputs



Communication connectors

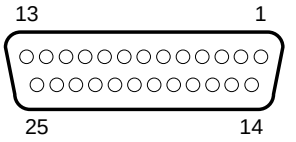
① RS-232C	D-SUB 25P connector (RS-232C interface) for ISR (Interactive Status Reporting)

Output connectors

② MONITOR R/L	XLR 3-pin × 2 Analog audio +4 dBm (Standard) (600 Ω load), low impedance, balanced
③ COMPOSITE VIDEO	BNC × 2 (including 1 for character superimpose) Analog composite video 1.0 V p-p, 75 Ω, sync negative
④ RF ADAPTOR	VIDEO : RCA jack, 1.0 V p-p, 75 Ω, sync negative (for charactor superimpose) DC : 5 V AUDIO : RCA jack, –10 dBu, high impedance, unbalance
PHONE (Upper control panel)	JM-60 stereo phone jack Analog audio Up to –12 dBu (8 Ω, load),unbalance

RS-232C: 25-pin (female)

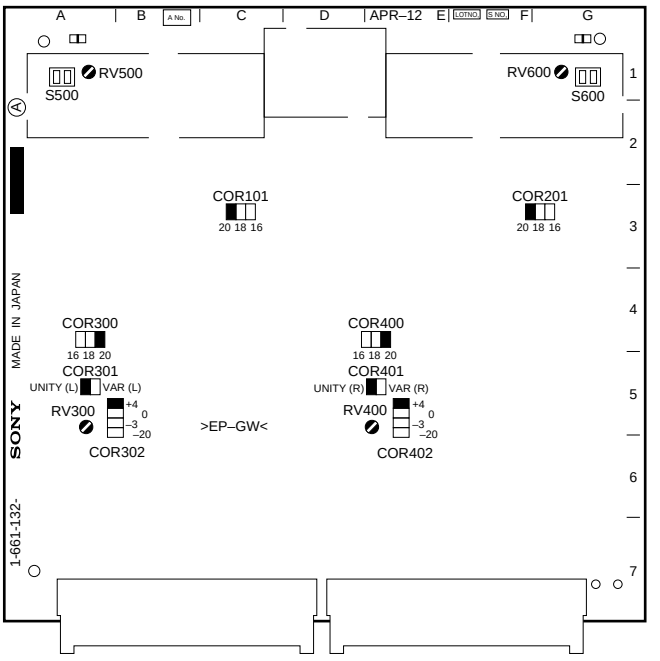
〈**External view**〉



Pin No.	Signal
1	FG ; Frame Ground
2	TXD ; Transmitted Data (Output)
3	RXD ; Received Data (Input)
4	RTS ; Request to Send (Output)
5	CTS ; Clear to Send (Input)
6	DSR ; Data Set Ready (Input)
7	SG ; Signal Ground
8	DCD ; Data Carrier Detect (Input)
9 to 19	NC
20	DTR ; Data Terminal Ready (Output)
21 to 25	NC

1-9. Switch and Shorting Plug Setting on PC Boards

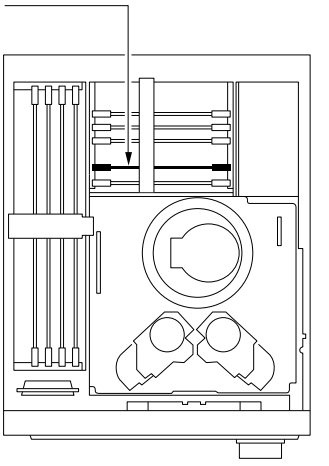
1-9-1. APR-12 Board



APR-12 Board (A Side)

Note

Refer to “2-13. Pulling Out/ Insertion of Plug-in Board” for pulling out and insertion of board.



< Top View >

HEAD TUNE switch (For Betacam/Betacam SP longitudinal audio playback)

It is not necessary to change the setting of these switches, when installing.

Channel	Ref. No.	Description
CH1	S500	By coupling with RV500, adjust the CH1 head amp high frequency response. This switch is used in audio head dumping adjustment. When the unit is shipped, this switch is set to the position based on the adjustment condition.
CH2	S600	By coupling with RV600, adjust the CH2 head amp high frequency response. This switch is used in audio head dumping adjustment. When the unit is shipped, this switch is set to the position based on the adjustment condition.

Audio input headroom setting (For Betacam/Betacam SP longitudinal audio playback)

Channel	Ref. No.	Display	Input headroom (dB) [ ]: Factory setting		
			[20]	18	16
CH1	COR101	20	Short	Open	Open
		18	Open	Short	Open
		16	Open	Open	Short
CH2	COR201	20	Short	Open	Open
		18	Open	Short	Open
		16	Open	Open	Short

Monitor output level setting

Channel	Ref. No.	Display	Output level (dBm/600 Ω) [ ]: Factory setting				Fine adjustment
			[+4]	0	−3	−20	
L	COR302	+4	Short	Open	Open	Open	RV300
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	
R	COR402	+4	Short	Open	Open	Open	RV400
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	

Monitor output headroom setting

Channel	Ref. No.	Display	Output headroom (dB) [ ]: Factory setting			Fine adjustment
			[20]	18	16	
L	COR300	20	Short	Open	Open	RV300
		18	Open	Short	Open	
		16	Open	Open	Short	
R	COR400	20	Short	Open	Open	RV400
		18	Open	Short	Open	
		16	Open	Open	Short	

Selecting fixed or variable monitor output level

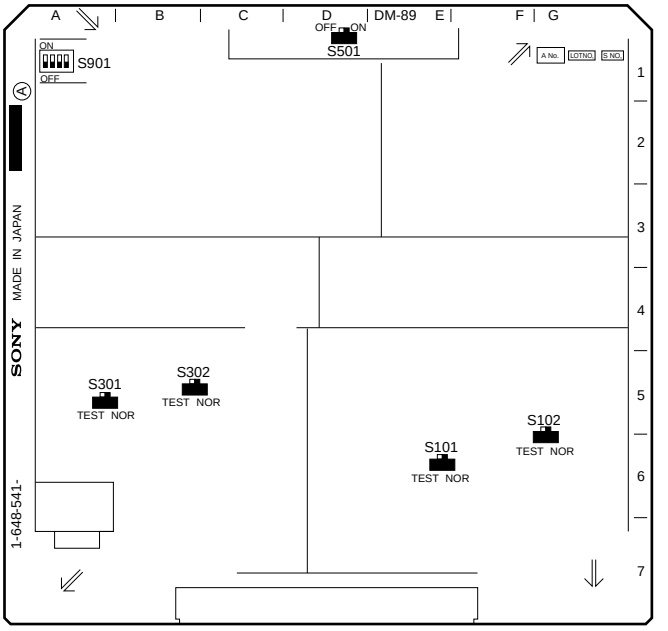
When the level variable is selected, the level is adjusted with the PHONE level control.

Channel	Ref. No.	Display	Monitor output level [ ]: Factory setting	
			[Fixed]	Variable
L	COR301	UNITY(L)	Short	Open
		VAR(L)	Open	Short
R	COR401	UNITY(R)	Short	Open
		VAR(R)	Open	Short

1-9-2. DM-89 Board

Note

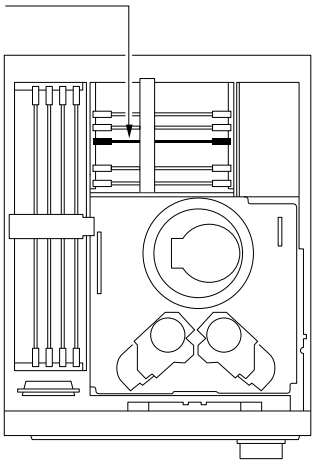
Never change the settings of the factory use switches.



DM-89 Board (A Side)

Note

Refer to "2-13. Pulling Out/ Insertion of Plug-in Board" for pulling out and insertion of board.



< Top View >

DM-89 board switch

Switch No.		Name	Description	Factory setting
S101		Y-RF LPF & EQ TEST (Y-RF low-pass filter & equalizer test)	Y-RF low-pass filter & equalizer test signal connection switch To adjust: Select the TEST position. Connect the input signal to TP103. (GND to E102)	NORMAL POSITION
S102		————	Factory use	NORMAL POSITION
S301		C-RF LPF & EQ TEST (C-RF low-pass filter & equalizer test)	C-RF low-pass filter & equalizer test signal connection switch To adjust: Select the TEST position. Connect the input signal to TP303. (GND to E302)	NORMAL POSITION
S302		————	Factory use	NORMAL POSITION
S501		————	Factory use	ON
S901	1	RF adjustment switch	Use RF adjustment OFF (OPEN): Normal mode ON (CLOSE): Adjustment and test modes	OFF (OPEN)
	2	————	Factory use	OFF (OPEN)
	3	————	Factory use	OFF (OPEN)
	4	————	Factory use	OFF (OPEN)

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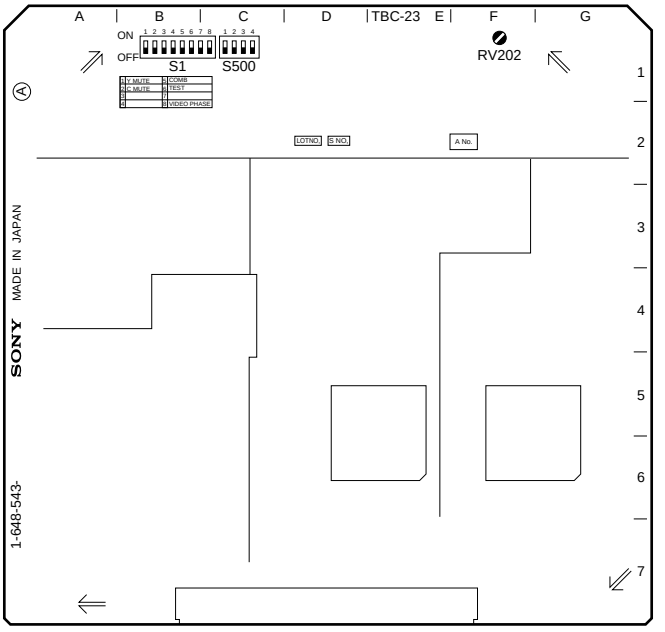
1-9-3. TBC-23 Board

Note

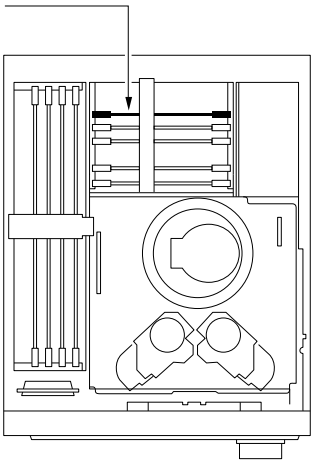
Never change the settings of the factory use switches.



TBC-23 Board (A Side)

Note

Refer to “2-13. Pulling Out/ Insertion of Plug-in Board” for pulling out and insertion of board.



< Top View >

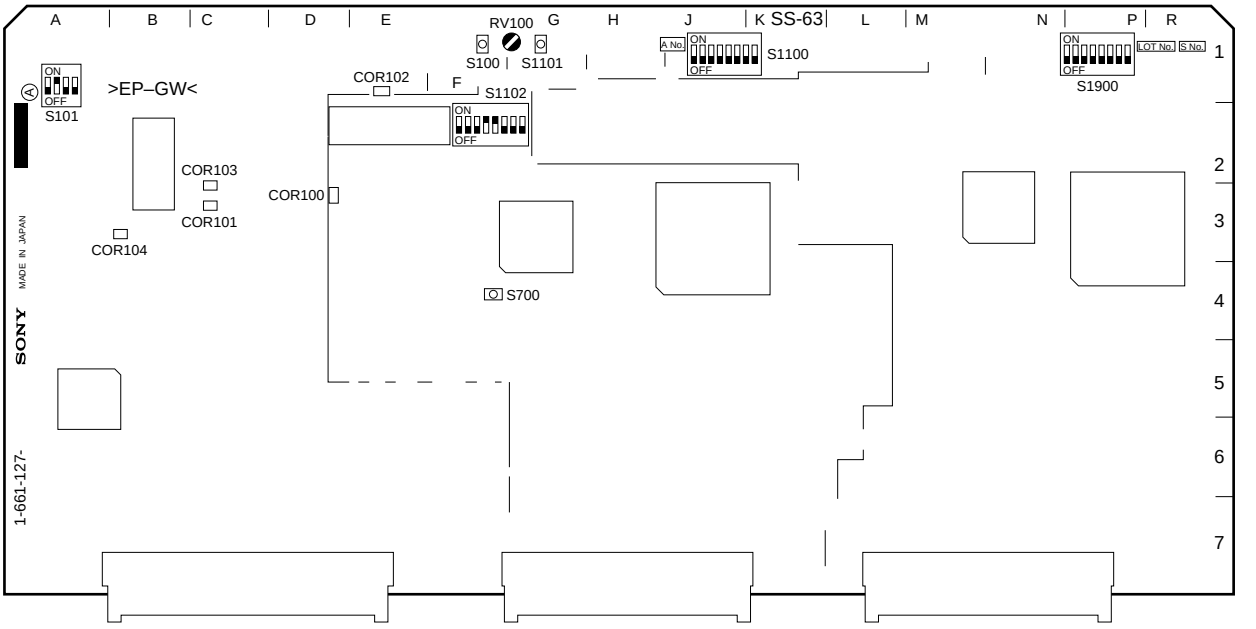
TBC-23 board switch

Switch No.		Name	Description	Factory setting
S1	1	Y MUTE	OFF (OPEN) : Normal mode ON (CLOSE) : Mute luminance signal	OFF (OPEN)
	2	C MUTE	OFF (OPEN) : Normal mode ON (CLOSE) : Mute color difference signal	OFF (OPEN)
	3	————	Factory use	OFF (OPEN)
	4	————	Factory use	OFF (OPEN)
	5	COMB	Select whether to activate a comb filter when the color difference signal has significant line crawl which cannot be corrected by LCC or not. OFF (OPEN) : Comb filter OFF ON (CLOSE) : Comb filter ON	OFF (OPEN)
	6	TBC TEST	Select whether to enable the TBC-23 and -24 boards self diagnostics or not. OFF (OPEN) : Normal mode ON (CLOSE) : Test (self diagnostics) mode	OFF (OPEN)
	7	————	Factory use	OFF (OPEN)
	8	VIDEO PHASE	Select whether to use VIDEO PHASE VR or not. OFF (OPEN) : VIDEO PHASE VR (RV202) disabled ON (CLOSE) : VIDEO PHASE VR (RV202) enabled	OFF (OPEN)
S500	1 | 4	————	Factory use	OFF (OPEN)

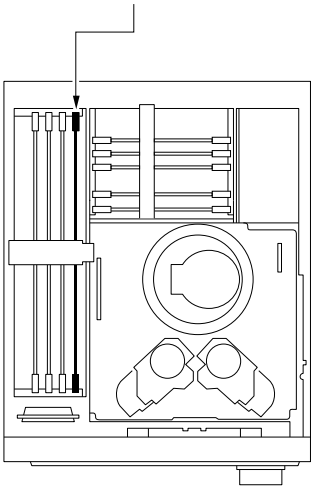
1-9-4. SS-63 Board

Note

Never change the settings of the factory use switches/short plugs.



SS-63 Board (A Side)



< Top View >

Note

Refer to “2-13. Pulling Out/ Insertion of Plug-in Board” for pulling out and insertion of board.

SS-63 board short plug

Ref. No.	Name	Description	Factory setting
COR 100	————	Factory use	OPEN
COR 101	————	Factory use	OPEN
COR 102	————	Factory use	OPEN
COR 103	————	Factory use	SHORT *
COR 104	————	Factory use	SHORT *

* : COR103 and 104 have no plug, but they are shorted by patterns.

SS-63 board switch

Switch No.		Name	Description	Factory setting
S100		REEL POSITION	Press this switch when changing the reel position. This switch does not operate in the state of installing the cassette compertment	————
S101	1	FLASH MEMORY	**Note** Do not change the setting of this switch during installation. Select the operation mode of flash memory OFF (OPEN): Normal mode ON (CLOSE): Writing mode	OFF (OPEN)
	2	ANA AUTO-TRACKING	Select whether to enable auto tracking operation or not during playing back the tape recorded based on the Betacam/Betacam SP format. OFF (OPEN): Not operate (The tracking is controled using RV-100.) ON (CLOSE): Operate **Note** The Betacam SX tape playback is carried out by non-tracking operation.	ON (CLOSE)
	3	ANA DISABLE	Select whether to prohibit analog Betacam tape playback or not. OFF (OPEN): Enable ON (CLOSE): Disable	OFF (OPEN)
	4	SV ERR DISABLE	**Note** Do not change the setting of this switch during installation. This switch selects whether to disable the detection of a malfunctional error in a servo circuit. OFF (OPEN): Enable (normal) ON (CLOSE): Disable	OFF (OPEN)
S700		SYSTEM RESET	Press this switch when resetting system control operation.	————
S1100	1	EXTENDED MENU	OFF (OPEN): Not display extended menu of set up menu ON (CLOSE): Displays extended menu of set up menu	OFF (OPEN)
	2	MAINTE MODE ACCESS	OFF (OPEN): Not enter into maintenance mode from lower control panel ON (CLOSE): Enters into maintenance mode from lower control panel	OFF (OPEN)
	3 | 8	————	Factory use	OFF (OPEN)
S1101		MAINTE MODE START	Press this switch when starting maintenance mode	————
S1102		**Note** Never change the settings of S1102 switch since each switch is set according to the characteristics of the unit. But set this switch according to each unit when replacing the board.		
	1 to 6	MODEL ID SWITCH	1: OFF (OPEN) 2: OFF (OPEN) 3: OFF (OPEN) 4: ON (CLOSE) 5: ON (CLOSE) 6: OFF (OPEN)	————
	7	J/SY	OFF (OPEN): Japan model ON (CLOSE): Except Japan model	ON (CLOSE)
	8	525/625	OFF (OPEN): 525/60 model ON (CLOSE): 625/50 model	NTSC model : OFF (OPEN) PAL model : ON (CLOSE)
S1900	1 | 8	————	Factory use	OFF (OPEN)

1-10. Mode Switching of Search Dial

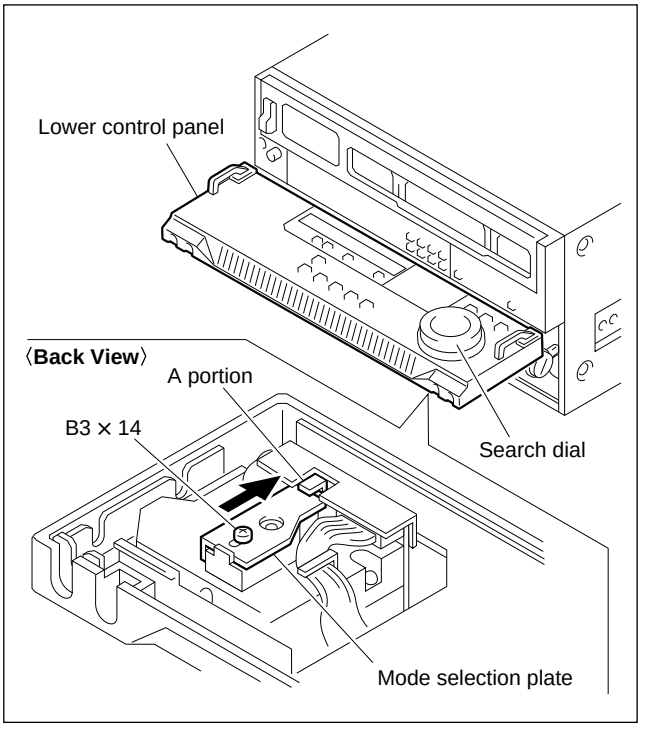
There are two kinds of operation to switch the search dial of this unit to jog mode or shuttle mode.

- **SHUTTLE/JOG button selecting**
  When you press the SHUTTLE button, the digital videocassette player is switched to shuttle mode.
  When you press the JOG button, the digital videocassette player is switched to jog mode.

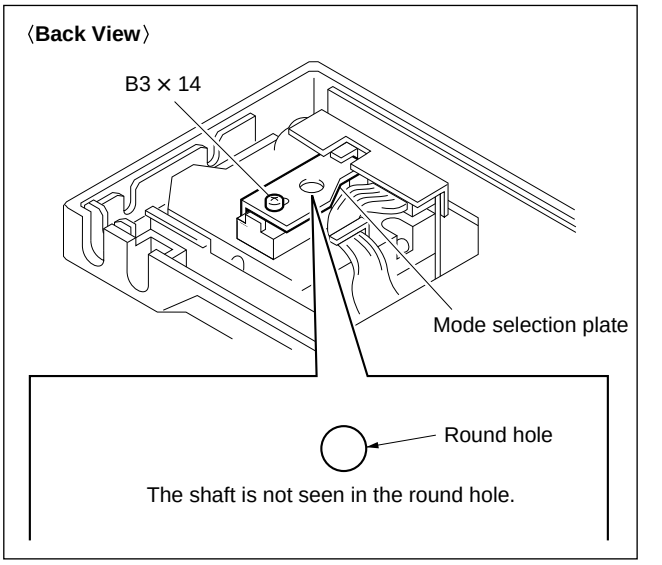
- **Search dial pressing**
  When you press the dial, the digital videocassette player toggles between shuttle and jog modes.
  It is possible to prohibit a manner of toggling.

Prohibiting Search Dial Pressing

1. Turn off the power.
2. Fix a lower control panel at 90˚.
3. Loosen a screw on the backside of the search dial as shown in the figure.
4. Slide the mode selection plate in the direction indicated by the arrow until it touches the A portion.

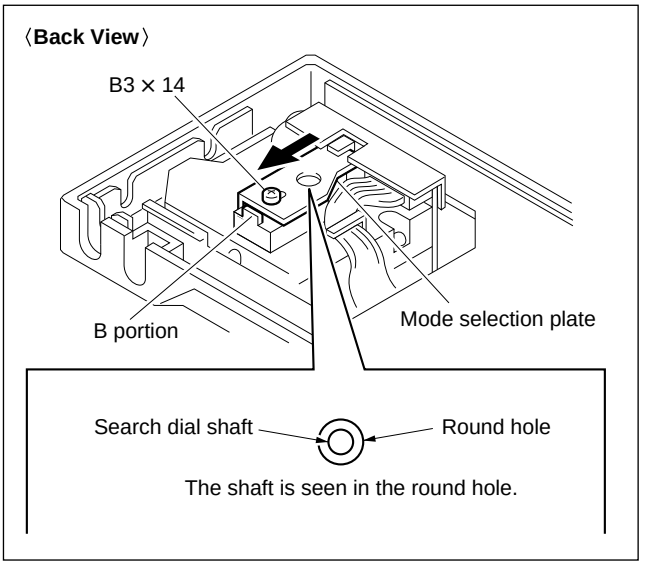


5. After checking that the shaft of the search dial is not seen in the round hole of the mode selection plate and then tighten the screw.



Allowing Search Dial Pressing

1. Turning off the power.
2. Fix a lower control panel at 90˚.
3. Loosen a screw on the backside of the search dial as shown in the figure.
4. Slide the mode selection plate in the direction indicated by the arrow until it touches the B portion.
5. After checking that the shaft of the search dial is seen in the round hole of the mode selection plate and then tighten the screw.



1-11. Setup Menu Items

The setup menu consists of a main menu and extended menu.
Refer to the operation manual for details of each menu.

Note

It is requred to adjust the switch setting of SS-63 board when allowing the system menu to display. Refer to “1-10-5. SS-63 Board”.

Main Manu

ITEM-H00 series: Hours meter parameter

- H01: OPERATION HOURS
- H02: DRUM RUNNING HOURS
- H03: TAPE RUNNING HOURS
- H04: THREADING COUNTER
- H12: DRUM RUNNING HOURS (Resettable)
- H13: TAPE RUNNING HOURS (Resettable)
- H14: THREADING COUNTER (Resettable)
- H15: AIRFILTER OPERATION HOURS (Resettable)

ITEM-000 series: Operational parameter

- 002: CHARACTER H-POSITION
- 003: CHARACTER V-POSITION
- 005: DISPLAY INFORMATION SELECT
- 007: TAPE TIMER DISPLAY
- 009: CHARACTER TYPE
- 011: CHARACTER V-SIZE
- 013: 525/625 SYSTEM SELECT

ITEM-B00 series: Menu bank parameter

- B01: RECALL BANK 1
- B02: RECALL BANK 2
- B03: RECALL BANK 3
- B04: RECALL BANK 4
- B11: SAVE BANK 1
- B12: SAVE BANK 2
- B13: SAVE BANK 3
- B14: SAVE BANK 4
- B20: RESET SETUP

Extended Menu

ITEM-100 series: Operational panel parameter

- 101: SELECTION FOR SEARCH DIAL ENABLE
- 102: MAXIMUM TAPE SPEED (B-CAM)
- 104: AUDIO MUTING TIME

ITEM-300 series: Editing parameter

- 320: AUDIO PB PROCESS IN EDIT POINT

ITEM-500 series: Tape protection parameter

- 501: STILL TIMER

ITEM-700 series: Video control parameter

- 703: BLANK LINE SELECT

ITEM-800 series: Audio control parameter

- 802: DIGITAL AUDIO MUTE IN SHUTTLE MODE
- 805: AUDIO MONITOR OUTPUT MIXING

ITEM-F00 series: Adjustment use only

- F01: AUTO NR IN SP MODE
- F02: EMERGENCY TAPE PROTECTION
- F13: TRACKING CONTROL VIA SEARCH DIAL
- F16: DEVICE TYPE MODIFY
- F34: STOP PINCH OFF TIME

1-12. Switching between 525/625 Line Systems

In the NTSC Model

This unit can be switched from 525/60 system to 625/50 system. The tape recorded based on the Betacam SX format of 625/50 system can also be played back by switching the system.

Notes

The tape recorded based on the Betacam/Betacam SP format of 625/50 system cannot be played back in this unit.

In the PAL Model

This unit can be switched from 625/50 system to 525/60 system. The tape recorded based on the Betacam SX format of 525/60 system can also be played back by switching the system. The signal of 525/60 system is output from all output connectors.

Notes

The tape recorded based on the Betacam/Betacam SP format of 525/60 system cannot be played back in this unit.

Method of Switching

Set the ITEM-013 to ON and change the mode following message which is superimposed on the video monitor.
(It is necessary that the CHARACTER switch of the sub control panel is set to ON so that the message is superimposed on the video monitor.)

Refer to the operation manual “Section 7. Menu System” for details.

Section 2
Service Overview

2-1. Notes on Power Supply Block

2-1-1. Warning on Primary Circuit Block and Electric Shock

WARNING

The primary circuit consists of the AC-169 board with AC inlet, the circuit breaker, the POWER switch, and the power supply unit.
Be careful not to receive an electric shock when performing the maintenance and service works with the power turned on.
A primary voltage remains applied to the AC-169 board, circuit breaker, and POWER switch even if the POWER switch is turned off. For the work that requires no current conduction, therefore, turn off the POWER switch and disconnect the power cord.

2-1-2. Note on Resetting the Circuit Breaker

The circuit breaker of a primary circuit is mounted on the power panel of this unit. When an overcurrent flows in the primary circuit, the breaker operates and the button protrudes.
If the breaker operates, eliminate the cause for which an overcurrent flows, then push the button.

2-2. Cleaning when the Heads are Clogged

Clean using a cleaning cassette tape (specified product: BCT-5CLN) when the video heads are clogged.
For the cleaning, refer to “5-2-1. Cleaning by Cleaning Tape”.

WARNING

Clean the video heads in the prescribed procedure using a specified cleaning cassette tape. If not, the video heads may be abrasive or damaged.

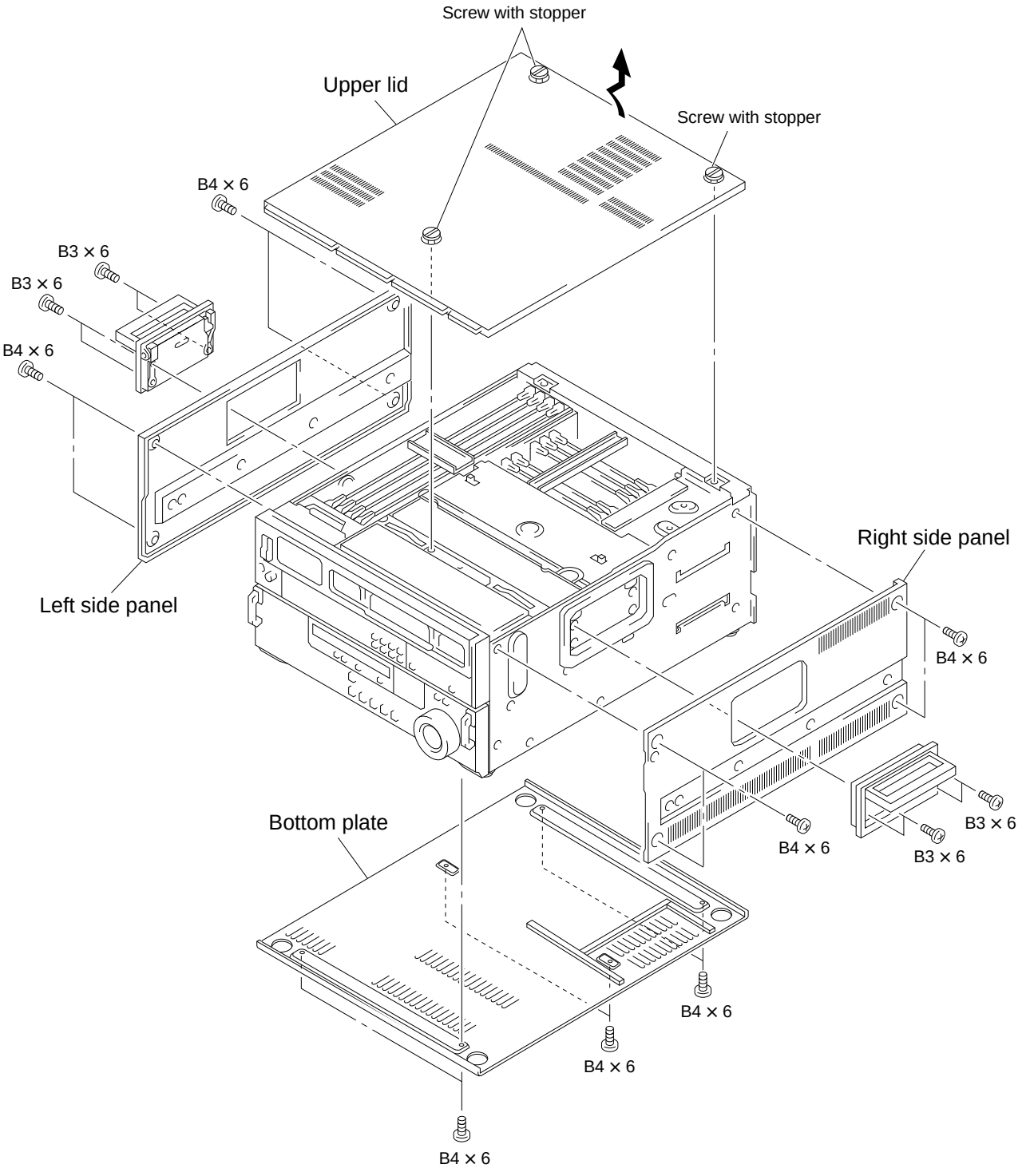
If the head clogging is not solved using a cleaning cassette tape, use a cleaning cloth.
For the cleaning using a cleaning cloth, clean according to the procedure of “5-2-3. Tape Running Surface of Upper Drum and Video Heads Cleaning” after confirming the cautions and preparation in “5-2-2. General Information for Cleaning by Cleaning Cloth”.

2-3. Removal/Installation of Cabinet

2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation

Notes

- Turn off the power and unplug the power cord before starting the removal/installation.
- Use the designated screws or this unit may be damaged.



Upper Lid

1. Loosen three fixing screws.
2. Remove the upper lid by moving in the direction indicated by the arrow.

For installation, perform in the reverse procedures of removal.

Side Panels

(The right and left side panels are the same in procedure.)

1. Remove four screws (B3 × 6), and remove the handle.
2. Remove four screws (B4 × 6), and remove the side panel.

For installation, perform in the reverse procedures of removal.

Bottom Plate

Note

- With the handle attached, place the unit on its right side panel down for removal and installation. Lend your hand so that the lower handle does not hang down.

1. Remove six screws (B4 × 6), and remove the bottom plate.

For installation, perform in the reverse procedures of removal.

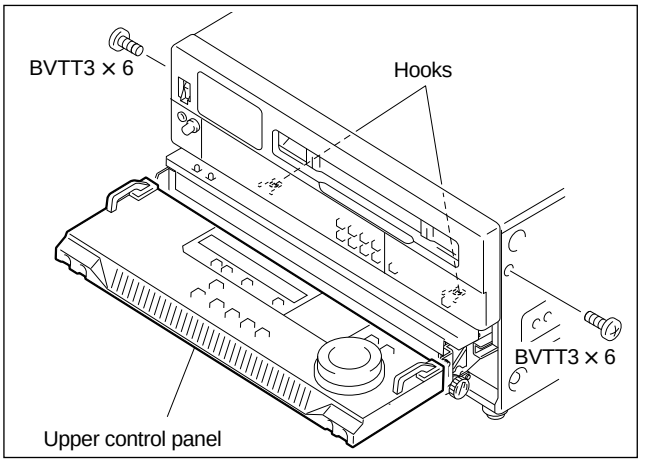
2-3-2. Control Panels Removal/Installation

Note

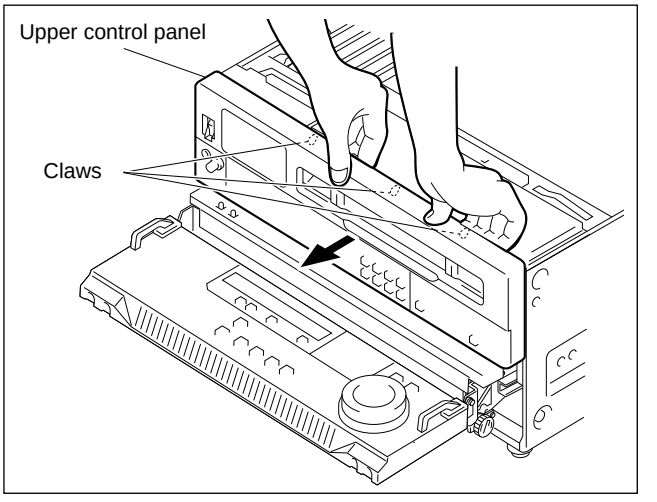
Turn off the power and unplug the power cord before starting the removal/installation.

Upper Control Panel

1. Remove the upper lid.
   (Refer to "2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation".)
2. Remove the each one screw on the left and right sides.
3. Take both side handles on a lower control panel and pull them slightly forward, then pull them more strongly. Then the lower control panel tilts upward (to 90° position).
4. Unhook two hooks at lower portion on the upper control panel.



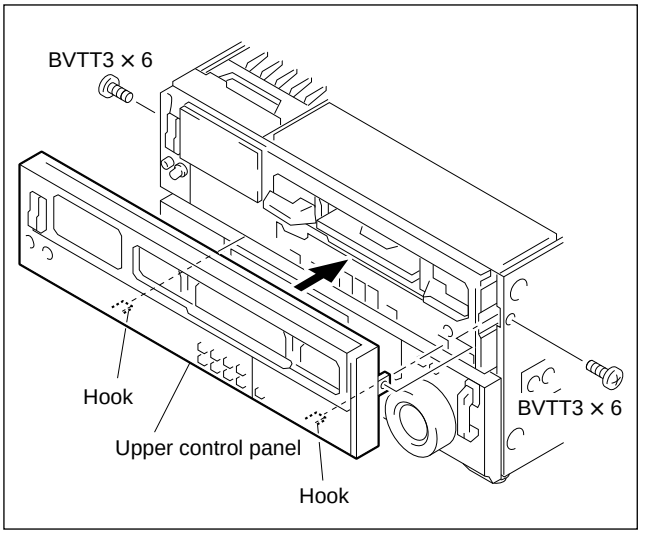
5. Unhook the claws at the upper control panel from the chassis, and remove it in the direction of the arrow.



For installation, perform in the reverse procedures of removal.

Note

Insert the hooks at the back of the panel into the convex portions of the chassis, then install the panel in the chassis. (Refer to the figure below.)

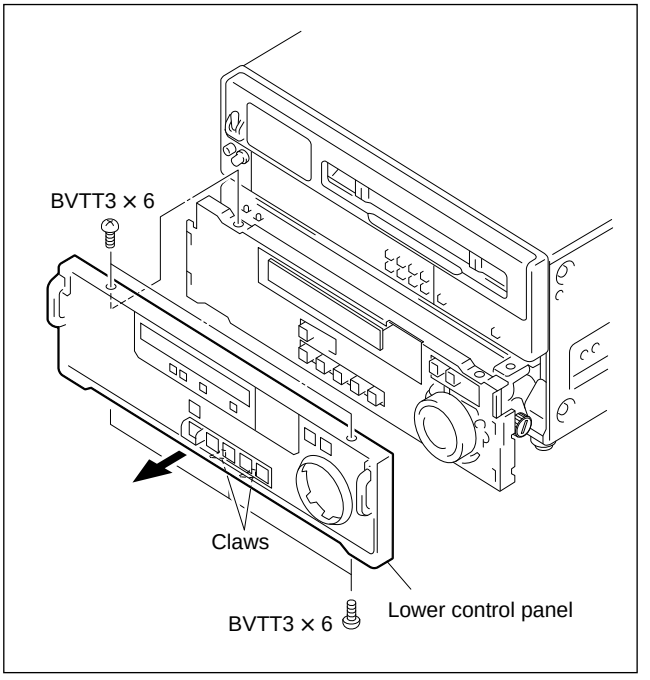


Note

Turn off the power and unplug the power cord before starting the removal/installation.

Lower Control Panel

1. Take both side handles of a lower control panel and pull them slightly forward, then pull them more strongly.
2. Remove five screws on the top and bottom of the lower control panel, then remove the panel.
   Note
   Open the lower control panel in this case. The screws at the bottom can be removed easily.
3. Remove two claws at the back of the lower control panel.
4. Remove the lower control panel in the direction of the arrow.



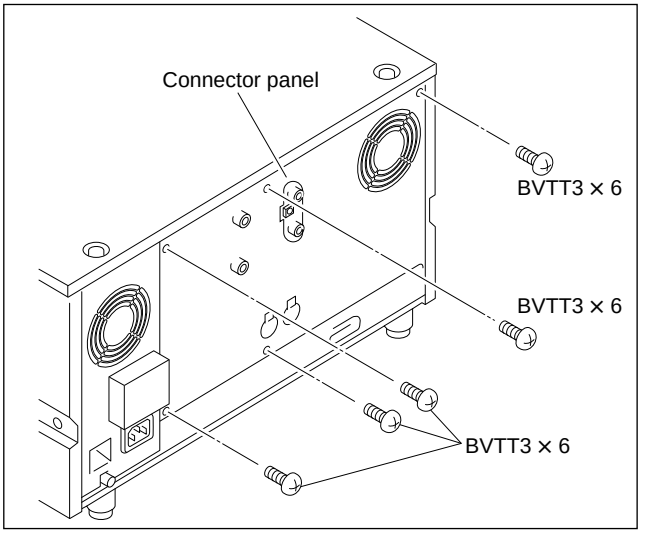
For installation, perform in the reverse procedures of removal.

2-3-3. Connector Panel Assembly Removal/ Installation

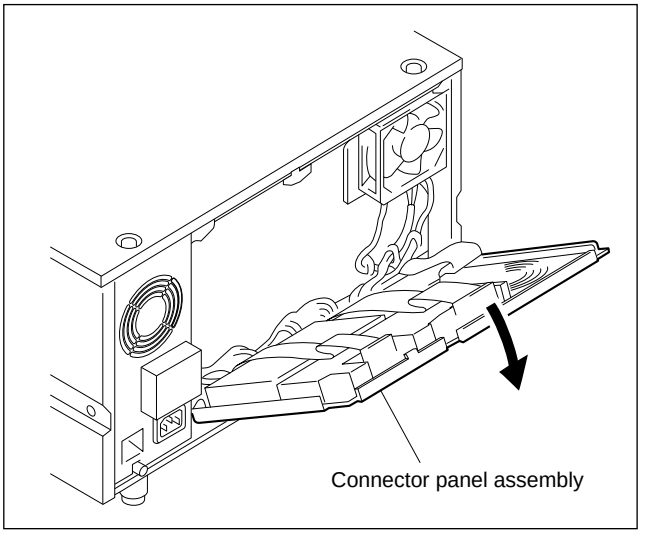
CAUTION

For your safety, turn off the power and unplug the power cord before starting the removal/installation.

1. Remove six screws indicated ⇒ on the connector panel.



2. Remove the connector panel assembly so as not to stretch the harness as shown in the figure.



For installation, perform in the reverse procedures of removal.

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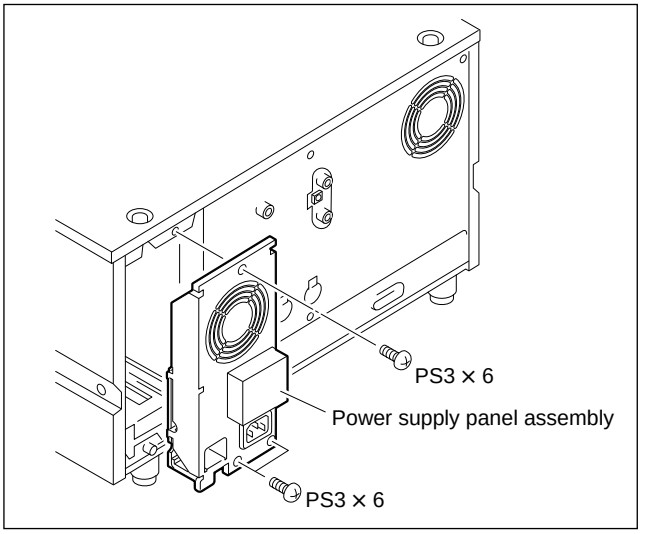
2-3-4. Power Supply Panel Assembly Removal/Installation

CAUTION

For your safety, turn off the power and unplug the power cord before starting the removal/installation.

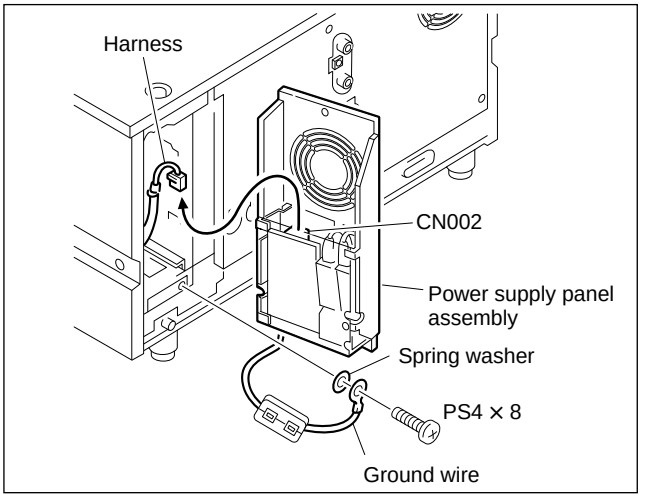
1. Remove three screws, then pull out the power supply panel assembly.



2. Disconnect the harness from the connector (CN002) on AC-169 board.
3. Remove one screw fixing the ground wire to the chassis and remove the power supply panel assembly.

Note

Be sure to remove the spring washer.



For installation, perform in the reverse procedures of removal.

Note

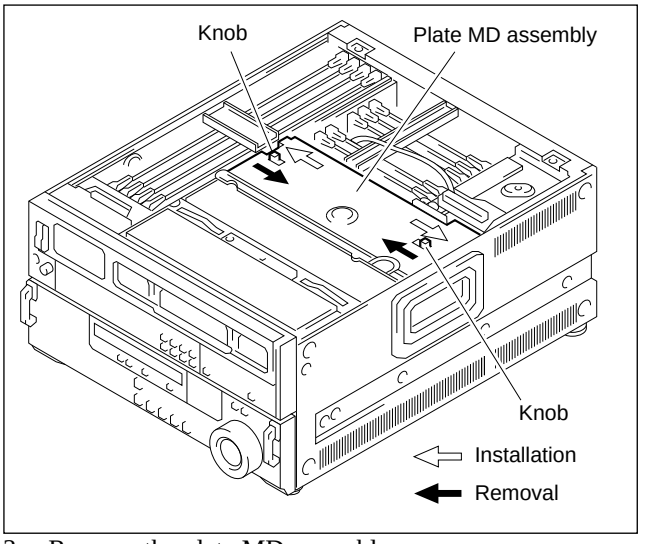
To fix the ground wire, put the spring washer between the terminal of ground wire and chassis.

2-4. Plate MD Assembly Removal/ Installation

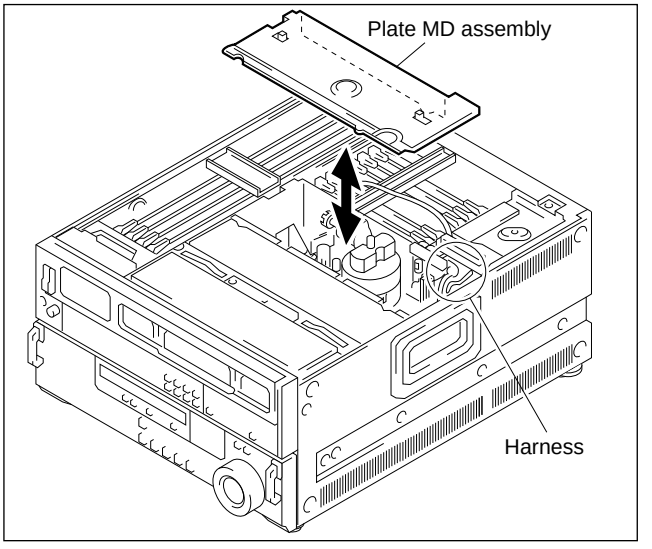
Note

Turn off the power and unplug the power cord before starting the removal/installation.

1. Remove the upper lid.
   (Refer to “2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation”.)
2. Slide the knobs on the plate MD assembly each in the inside.
   (Move the knobs to the outside. The plate MD assembly is then fixed.)



3. Remove the plate MD assembly.



For installation, perform in the reverse procedures of removal.

Note

Be careful not to pinch the harness under the plate MD assembly in the installation.

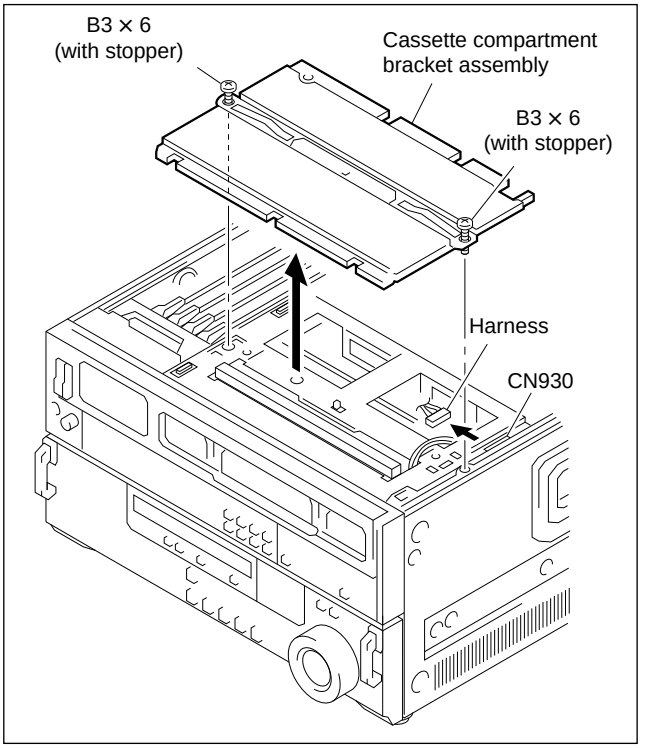
2-5. Cassette Compartment Removal/ Installation

Notes

- Turn off the power and unplug the power cord before starting the removal/installation.
- The cassette compartment cannot be removed with the cassette tape inserted. Press the EJECT button with the power turned on and eject the cassette tape.
  If the cassette compartment does not move due to an electric trouble, take out the cassette tape manually. (Refer to "2-12. How to Take Out the Cassette when the Tape is Slacking".)

Removal

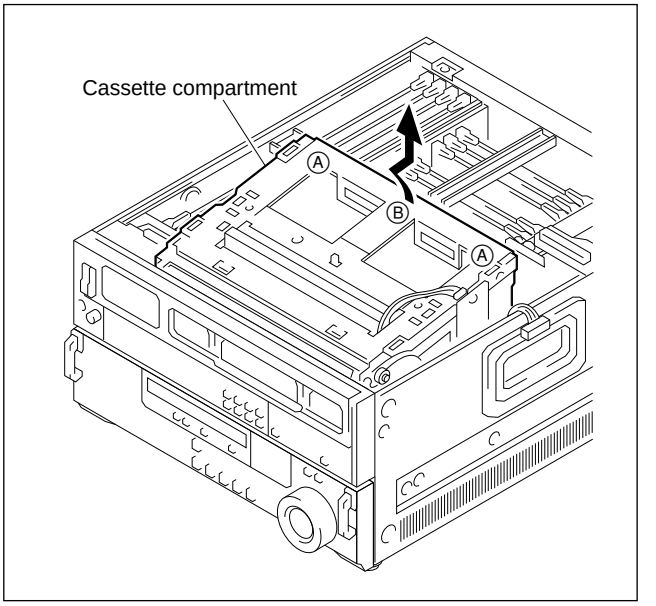
1. Remove the upper lid.
   (Refer to "2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation".)
2. Remove the plate MD assembly.
   (Refer to "2-4. Plate MD Assembly Removal/Installation".)
3. Loosen two screws, then remove the cassette compartment bracket assembly.
4. Disconnect the harness from the connector (CN930) on CL-29 board, and set the harness so that it does not put between chassis.



5. Hold the cassette compartment at the portions Ⓐ and lift up the cassette compartment slightly (by 1 cm). When the four cassette compartment positioning legs come off from the four positioning holes on a mechanical deck, shift the cassette compartment backward (by 1 cm) to the position where the cassette door can be completely seen when viewed from just above.
6. Hold the cassette compartment at the portion Ⓑ and rais it slowly upward, then remove it.

Notes

- Raise it slowly while sliding the cassette compartment slightly back-and-forth so that the gear on the right side of the cassette compartment does not touch the chassis.
- Never move the cassette compartment to right and left. If unnecessary force is applied to right and left, the gear or parts may come off.
- Place the cassette compartment with the cassette door up or with cassette compartment positioning legs down.
  (If it is placed on the cassette lid down, the flexible card wire/board might be damaged.)



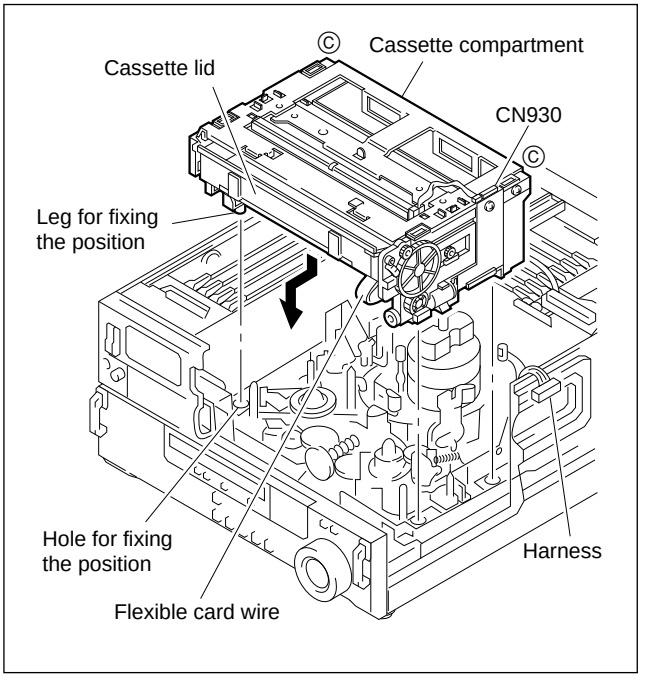
Installation

7. Install the cassette compartment while inserting slantingly in the direction as shown in the figure.

Notes

- Insert it slowly while sliding the cassette compartment slightly back and forth so that the gear on the right of the cassette compartment does not touch the chassis.
- Never move the cassette compartment to right and left. If unnecessary force is applied to right and left, the gear or parts may come off.

8. Insert the four legs of the cassette compartment for fixing the position into the four holes on the mechanical deck for fixing the position by pressing the Ⓒ portions as shown in the figure.



9. Connect the harness to the connector (CN930) on the CL-29 board.
10. Install the cassette compartment bracket assembly.
11. Install the plate MD assembly and the upper lid.

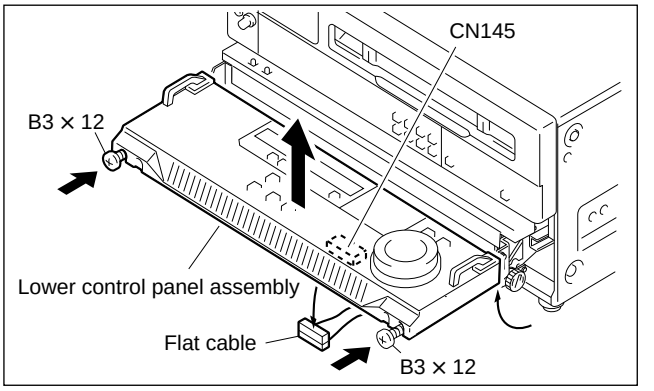
2-6. Lower Control Panel Assembly Removal/Installation

Note

Turn off the power and unplug the power cord before starting the removal/installation.

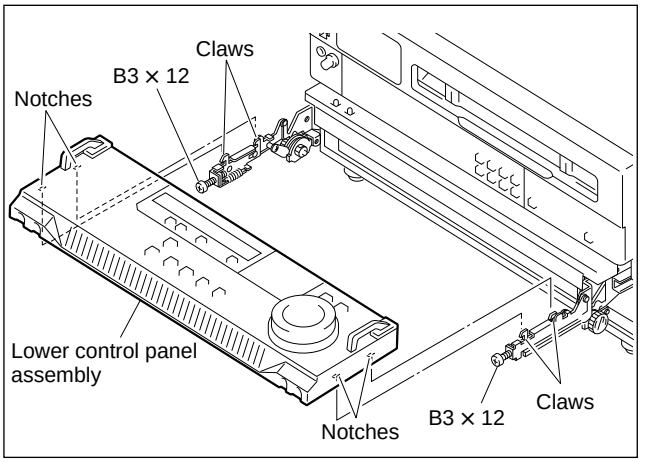
Removal

1. Take both side handles on a lower control panel and pull them slightly forward, then pull them more strongly. Then the lower control panel tilts upward (to 90° position).
2. Disconnect the flat cable from the connector (CN145) on the back of the lower control panel.
3. Loosen two screws in bottom corners of the lower control panel assembly. (Loosen the screws until screw's top are exposed from the lack of the panel assembly.)
4. Push the loosened screws the direction indicated by the arrow, and raise the lower control panel assembly.



Installation

5. Set the notches of the panel assembly to the claws of the arms and insert the lower control until making a click sound.
6. Fix the lower control panel assembly with two screws.
7. Connect the flat cable to the connector (CN145).
8. Return the lower control panel to 0°, then store.



2-7. Circuit Function

System configuration	No.	Board name	Circuit function
Digital process	1	DPR-71D	Digital data processor (Outer error correction)
	2	DPR-73F	Digital data processor (Audio/Video processor)
Video process	3	VPR-17F/17FP	Video signal processor (A-D, D-A, Reference clock generator, Composite encoder)
Analog BETACAM video PB process	4	DM-89/89P	RF demodulator for Analog Betacam PB
	5	TBC-24/24P	TBC (A-D, Write clock generator)
	6	TBC-23/23PG	TBC (Sequence and Reference)
Audio process	7	APR-12F/12FP	Audio D-A (Monitor), Analog Betacam audio (LAU) PB circuit
RF process	8	EQ-56F	RF equalizer (PB EQ, Analog BETACAM PB buffer, Inner error correction)
System/servo control	9	SS-63	System control, Servo control
	10	MS-50	Solenoids driver (Pinch, Brakes, Cleaning), Sensors input, Degaussing head driver
	11	DR-315	Motors driver (Drum, Capstan, Reels, Threading, Reel shift, Cassette up/down)
	12	TC-96D	TC PB circuit
Mech. deck driver/sensor	13	SE-341	Connection board with Condensation sensor
	14	PTC-54	Threading FG
	15	CCM-15	Threading motor
	16	CCM-15	Reel shift motor
	17	PD-35	Pinch solenoid connection, Tape end sensor connection
	18	TR-79	T tension sensor, Threading-end and Unthreading-end sensors
	19	PTC-59	Cassette’s holes sensor
	20	RM-82	T reel motor
	21	SE-344	T reel FG
	22	RM-82	S reel motor
	23	SE-344	S reel FG
	24	PTC-71	Reel position sensors
	25	TR-78	S tension sensor
Cassette compartment	26	CL-29	Cassette up/down motor, Cassette down sensors
	27	LP-81	Lamp of cassette compartment
	28	PC-70	Cassette-in sensors, Cassette size sensor
Front panel	29	FP-91	Panel function (Switches, LEDs) control, CAV control level conversion
	30	VR-223D	Phone level VRs, Phone connector
	31	VR-207	Audio PB level
	32	SWC-30F	Upper control panel function (Switches, LEDs)
	33	SWC-31F	Sub control panel function
	34	KY-364F	Lower control panel function
	35	PTC-69	Search dial sensor, Dial solenoid connection

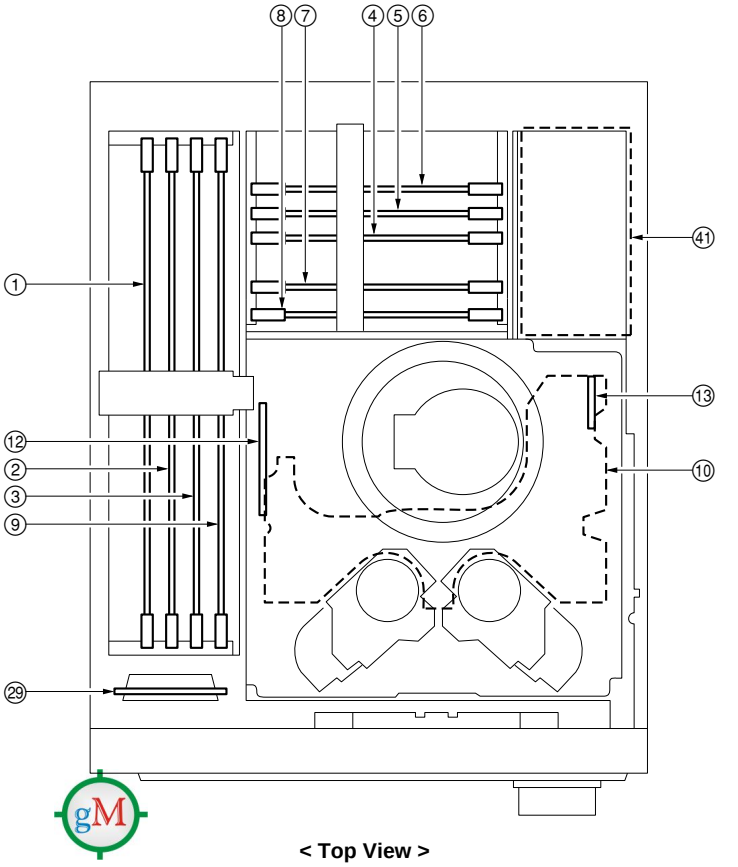
System configuration	No.	Board name	Circuit function
Motherboard, connector panel	36	MB-648F	Motherboard, Remote control connectors (REMOTE, RS-232C, VIDEO CONTROL)
	37	CP-279N	Connector board (Analog video) with output buffer
	38	CP-280N	Connector board (MONITOR output)
	39	CP-287N	Connector board (RF adaptor) with P-S
Power	40	AC-169	AC connector board with Breaker
	41	PS unit	Switching regulator (PS=Power supply)

2-8. Location of Main Parts

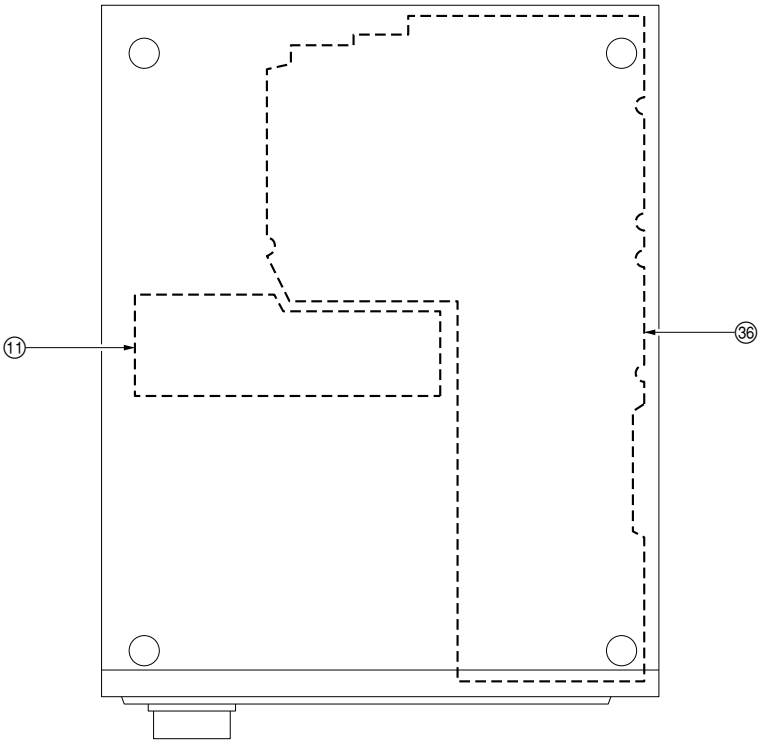
2-8-1. Printed Circuit Boards and Power Supply Unit Location

AC-169 ..... ㊵
APR-12 ..... ⑦
CCM-15 ..... ⑮⑯
CL-29 ..... ㉖
CP-277 ..... ㊲
CP-278 ..... ㊳
CP-297 ..... ㊴
DM-89 ..... ④
DPR-71 ..... ①
DPR-73 ..... ②
DR-315 ..... ⑪
EQ-56 ..... ⑧
FP-91 ..... ㉙
KY-364 ..... ㉞
LP-81 ..... ㉗
MB-648 ..... ㊱
MS-50 ..... ⑩
PC-70 ..... ㉘
PD-35 ..... ⑰
PTC-54 ..... ⑭
PTC-59 ..... ⑲
PTC-69 ..... ㉟
PTC-71 ..... ㉔
RM-82 ..... ⑳㉒
SE-341 ..... ⑬
SE-344 ..... ㉑㉓
SS-63 ..... ⑨
SWC-30 ..... ㉜
SWC-31 ..... ㉝
TBC-23 ..... ⑥
TBC-24 ..... ⑤
TC-96 ..... ⑫
TR-78 ..... ㉕
TR-79 ..... ⑱
VPR-17 ..... ③
VR-207 ..... ㉛
VR-223 ..... ㉚

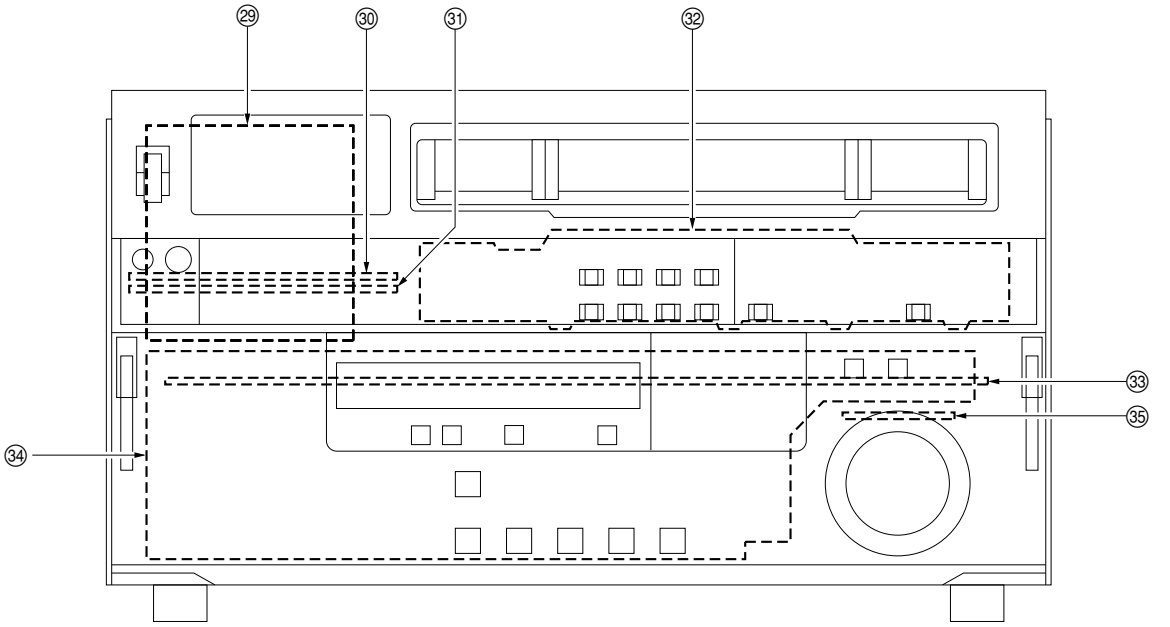
Power supply unit .... ㊶



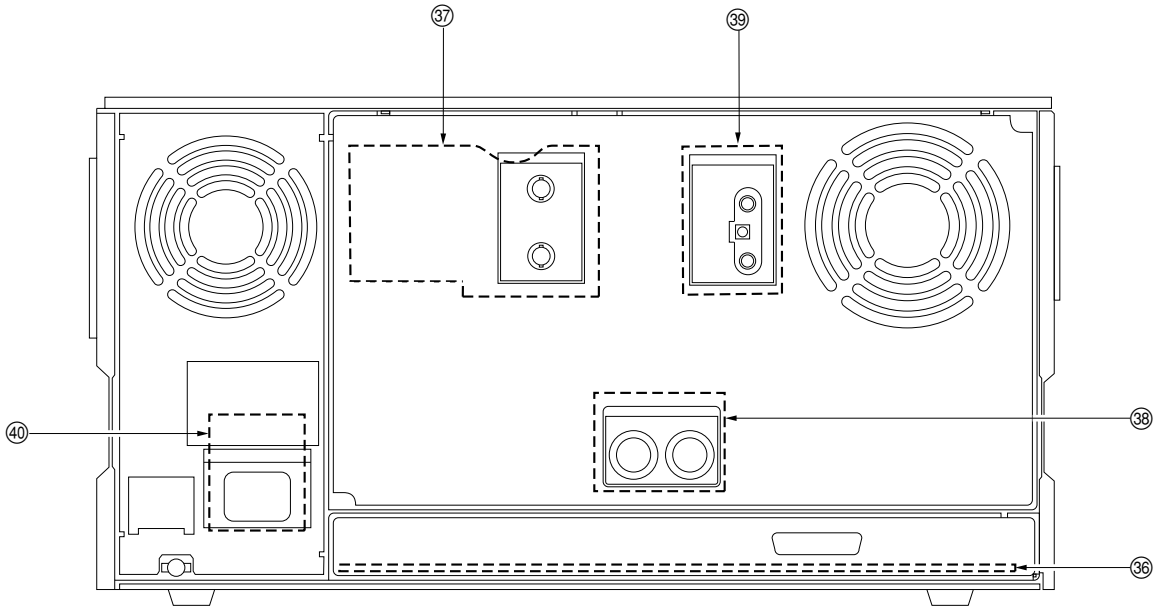
< Top View >



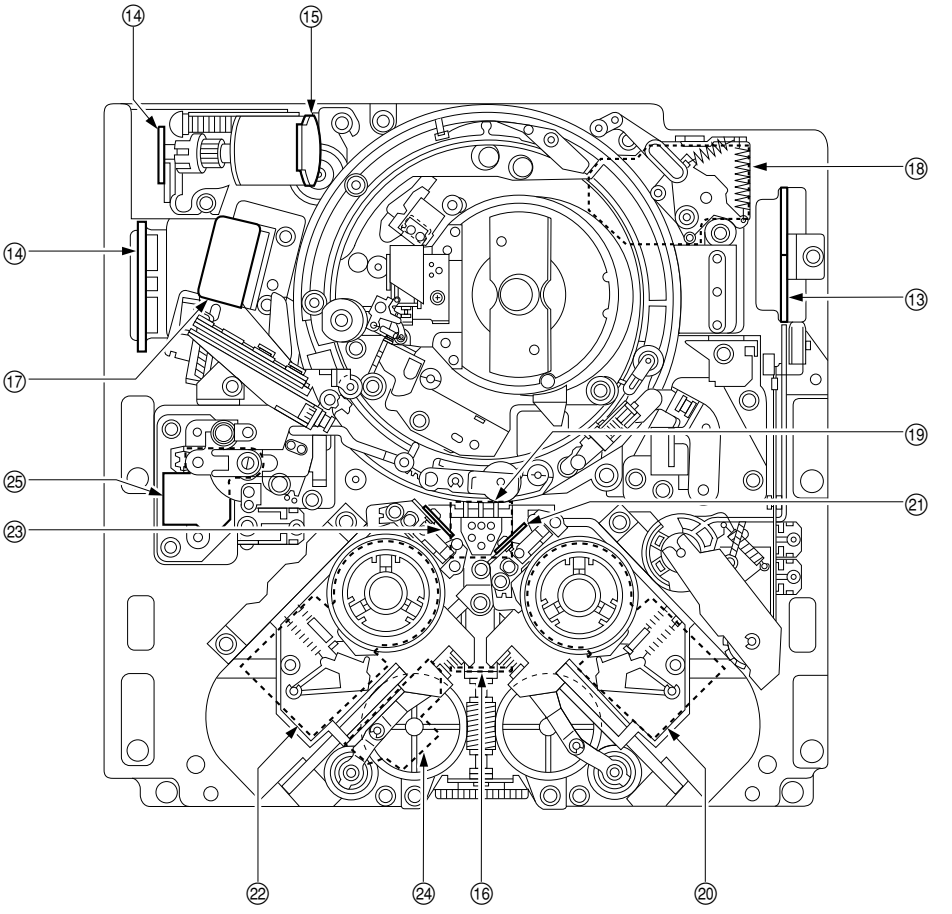
< Bottom View >



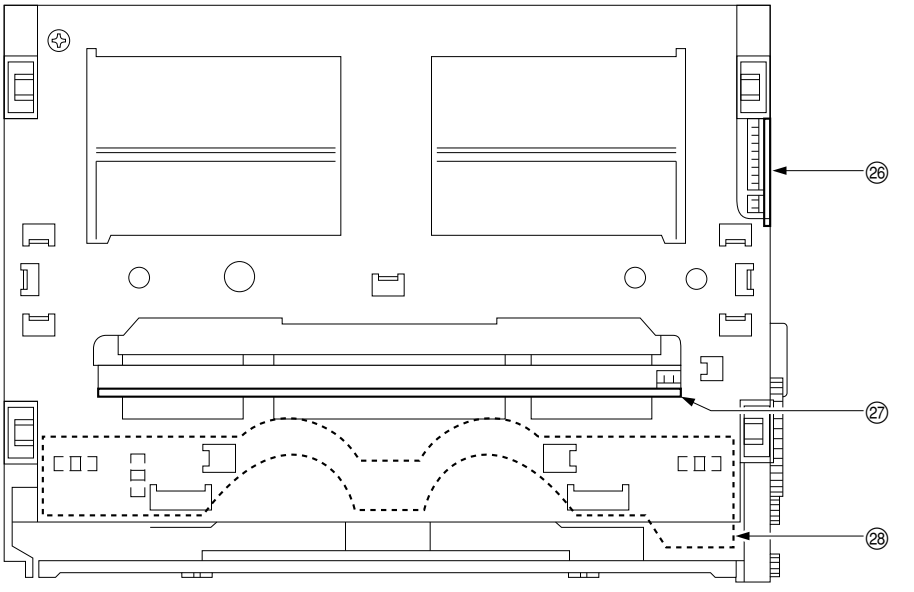
< Front View >



< Rear View >

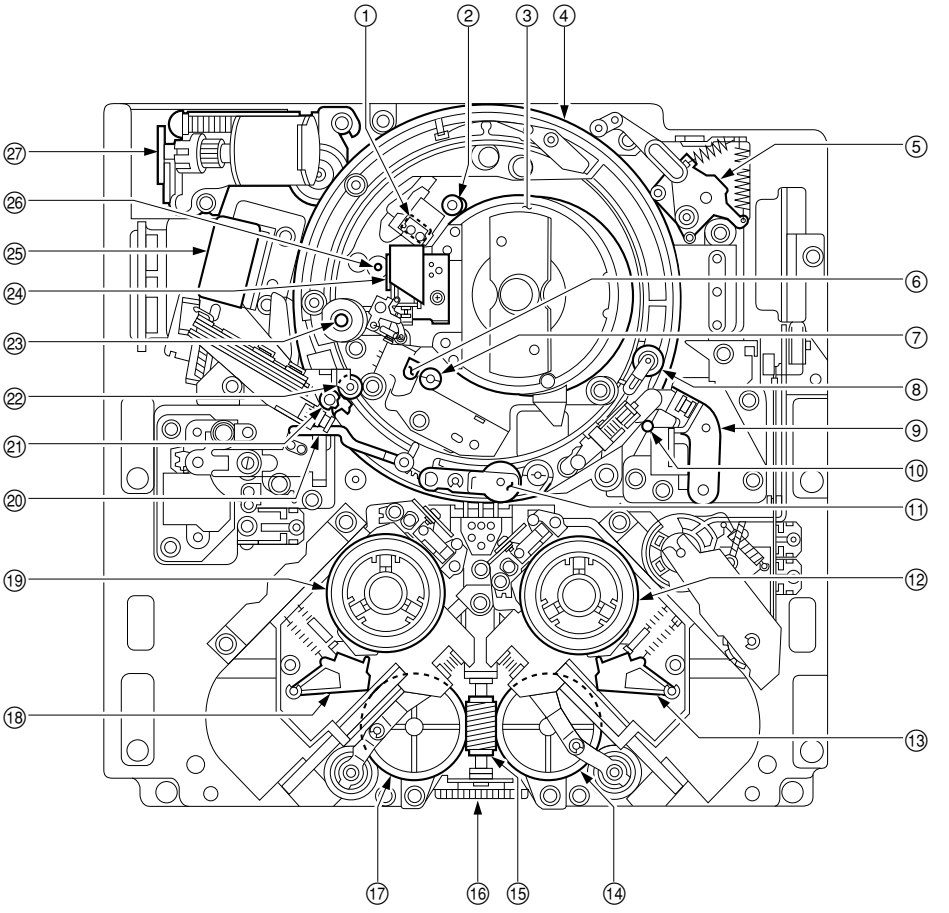


< Top View of Mechanical Deck >



< Top View of Cassette Compartment >

2-8-2. Main Mechanical Parts Location

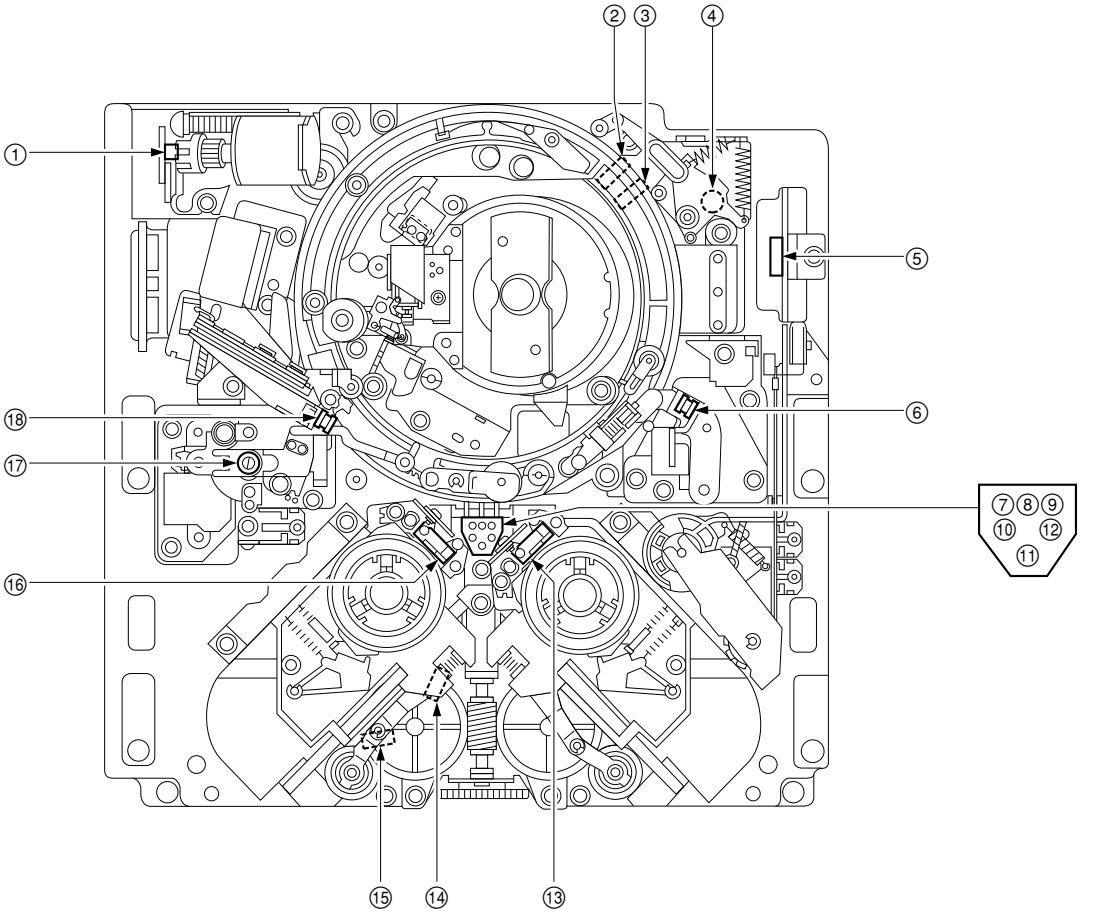


< Top View of Mechanical Deck >

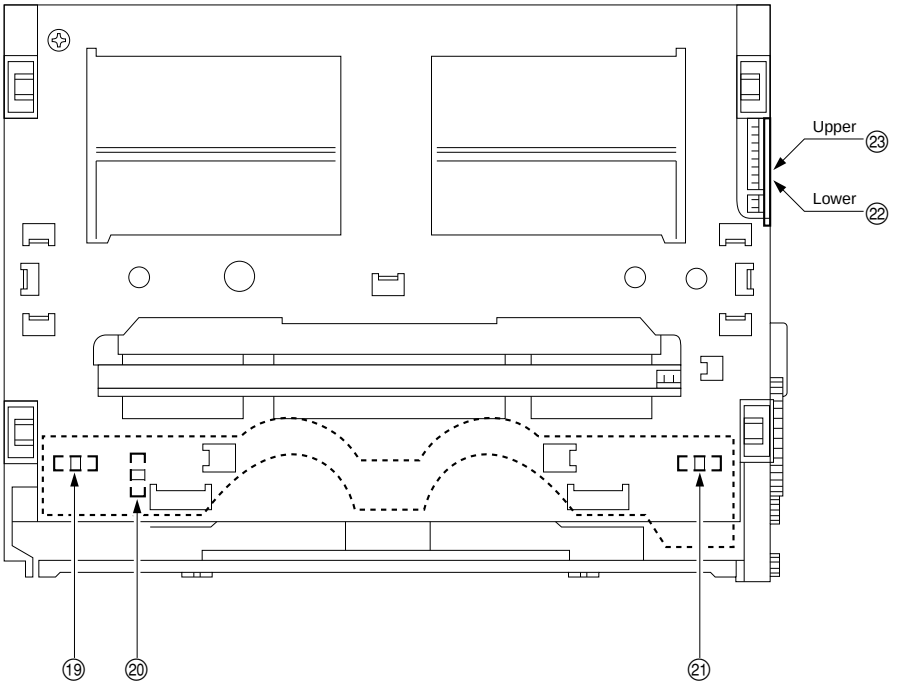
INDEX

① Audio/TC head
② TG-3 tape guide
③ Head drum
④ Threading ring
⑤ T tension regulator arm
⑥ CTL head
⑦ TG-2 tape guide
⑧ Audio/TC head cleaner
⑨ T drawer arm
⑩ TG-10 tape guide
⑪ Pinch roller
⑫ T reel table
⑬ T brake assembly
⑭ T worm wheel
⑮ Worm gear
⑯ Drive gear
⑰ S worm wheel
⑱ S brake assembly
⑲ S reel table
⑳ S tension regulator arm
㉑ Tape cleaner
㉒ TG-0 tape guide
㉓ Capstan shaft
㉔ Cleaning roller block
㉕ Pinch press block
㉖ TG-4 tape guide
㉗ Threading gear block

2-9. Function and Location of Sensors



< Top View of Mechanical Deck >



< Top View of Cassette Compartment >

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① **Threading motor FG sensor**
This sensor detects the rotation speed of the threading motor.
The output signal of this sensor enters the threading/unthreading motor servo circuit, and controls the threading/unthreading speed to protect the tape damage during threading/unthreading operation.

② **Unthreading-end sensor**
③ **Threading-end sensor**
These sensors detect whether the threading ring reaches the threading-end or unthreading-end position.

④ **T tension regulator arm sensor**
This sensor detects the position of a T tension regulator arm.
During playback, the output signal of this sensor enters the T reel motor servo circuit, and controls the reel torque to keep a constant T tape tension.

⑤ **Condensation sensor**
This sensor detects whether the dew condensation occurs in the unit.

⑥ **Tape top sensor**
This sensor detects the beginning of the tape, and in addition detects the end of the tape that runs in the reverse direction.

⑦ **Reel hub diameter sensor**
This sensor detects the reel hub diameter detection tab of a cassette.
The reel hub with two types of diameters (thin and thick) is available according to the length of a tape stored in a cassette.
This sensor is used discriminate the diameter. The output signal of this sensor enters the servo circuit of take-up and supply reel motors, and controls the reel rotation speed and torque during tape transport.

⑧ **Metal/oxide tape sensor**
This sensor detects the metal tape detection tab of a Betacam/Betacam SP cassette.
This sensor is used to discriminate whether the tape stored in a Betacam/Betacam SP cassette is an oxide tape or metal particle tape.

⑨ **Tape thickness sensor**
This sensor detects the tape thickness detection tab of a cassette.
This sensor is used to discriminate the thickness of the tape stored in a cassette.

⑩⑪⑫ **Cassette classification sensors**
These sensors detect the three cassette type detection tabs of a cassette.
These sensors are used to discriminate whether a cassette can be used in this unit.

⑬ **T reel table FG sensor**
This sensor detects the rotation speed of the take-up reel motor.
The output signal of this sensor enters the reel motor servo circuit, and controls the reel table rotation speed.

⑭ **Reel S position sensor**
⑮ **Reel L position sensor**
These sensors detect whether the reel table moves to the correct position according to the size of the inserted cassette.

⑯ **S reel table FG sensor**
This sensor detects the rotation speed of the supply reel motor.
The output signal of this sensor enters the reel motor servo circuit, and controls the reel table rotation speed.

⑰ **S tension regulator arm sensor**
This sensor detects the position of an S tension regulator arm.
During playback, the output signal of this sensor enters the S reel motor servo circuit, and controls the reel torque to keep a constant S tape tension.

⑱ **Tape end sensor**
This sensor detects the end of the tape that runs in the forward direction.

⑲ **Cassette -in sensor (L)**
This sensor detects whether a cassette is being inserted.

⑳ **Cassette size sensor**
This sensor detects whether the inserted cassette is L size or S size.

㉑ **Cassette-in sensor (R)**
This sensor detects whether a cassette is being inserted.

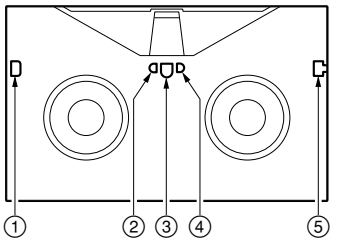
㉒ **Cassette-down (2) sensor**
㉓ **Cassette-down (1) sensor**
These sensors detect the movement (position) of a cassette compartment by the combination of the detection state of the two sensors and a cassette-in sensor.

2-10. System of Cassette

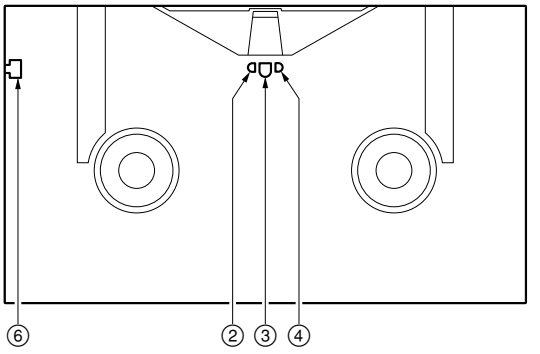
As shown in the figure below, plugs and tabs are provided at the back side of the cassette tape.

Cassette for Betacam or Betacam SP

Small cassette (S cassette)



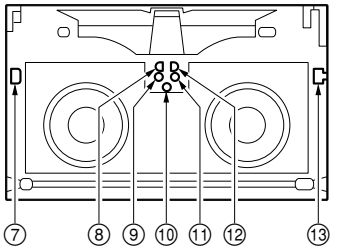
Large cassette (L cassette)



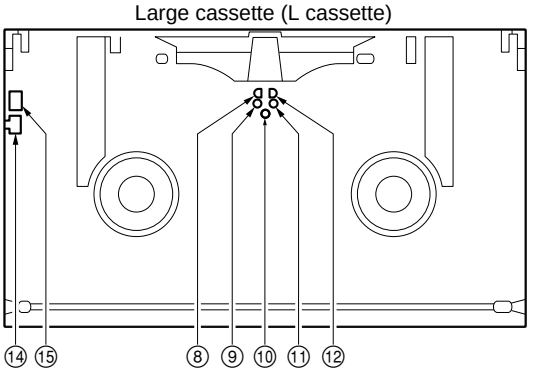
① S cassette REC inhibit tab (for oxide tape)
② Tape thickness detection tab
③ Metal tape detection tab
④ Reel hub diameter detection tab
⑤ S cassette REC inhibit plug (for metal particle tape)
⑥ L cassette REC inhibit plug

Cassette for Betacam SX

Small cassette (S cassette)



Large cassette (L cassette)



⑦ S cassette analog REC inhibit hole
⑧ Tape thickness detection tab
⑨⑩⑪ Cassette classification detection tabs
⑫ Reel hub diameter detection tab
⑬ S cassette digital REC inhibit tab
⑭ L cassette digital REC inhibit tab
⑮ L cassette analog REC inhibit hole

Detection Tabs

In cassette for Betacam or Betacam SP

No.	Use	With tab (Close hole)	Without tab (Open hole)
②	Tape thickness detection	Thick (Tape thickness is 20 µm)	Thin (Tape thickness is 15 µm)
③	Metal tape detection	Oxide tape	* Metal particle tape
④	Reel hub diameter detection	Small hub	Large hub

* : For the metal particle tape, digital recording can be performed using a Betacam SX format.

In cassette for Betacam SX

No.	Use	With tab (Close hole)	Without tab (Open hole)
⑧	Tape thickness detection	Tape thickness is 14.5 µm	Tape thickness is except 14.5 µm
⑫	Reel hub diameter detection	Small hub	Large hub
⑨⑩⑪	Cassette classification detection	Without tab (open hole) at only ⑨ for Betacam SX cassette. Represents the cassette classification by combination of three tabs. (See below)	

Cassette classification detection tabs

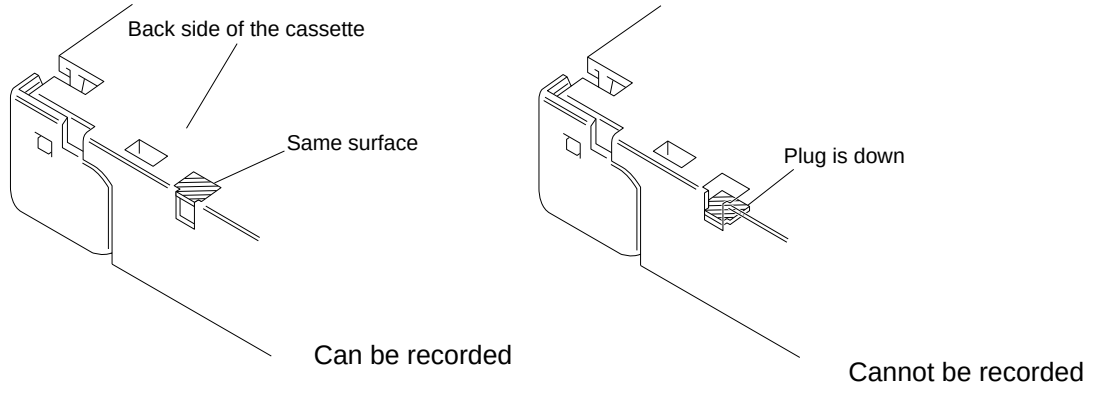
○ : with tab (close hole), ● : without tab (open hole)

State of tabs ⑨⑪ ⑩	Cassette class	Remake
○○	Betacam or Betacam SP	———
●○	Betacam SX	———
○●	Digital Betacam	Unusable
●●, ○●, ●●, ○●, ●●	Except the above class	Unusable

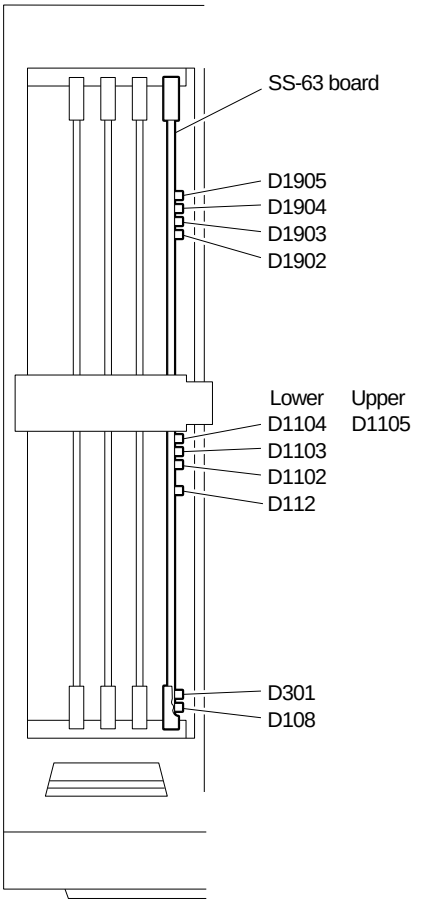
Note

REC inhibit plugs

(The REC inhibit plug is not detected since this unit is player.)



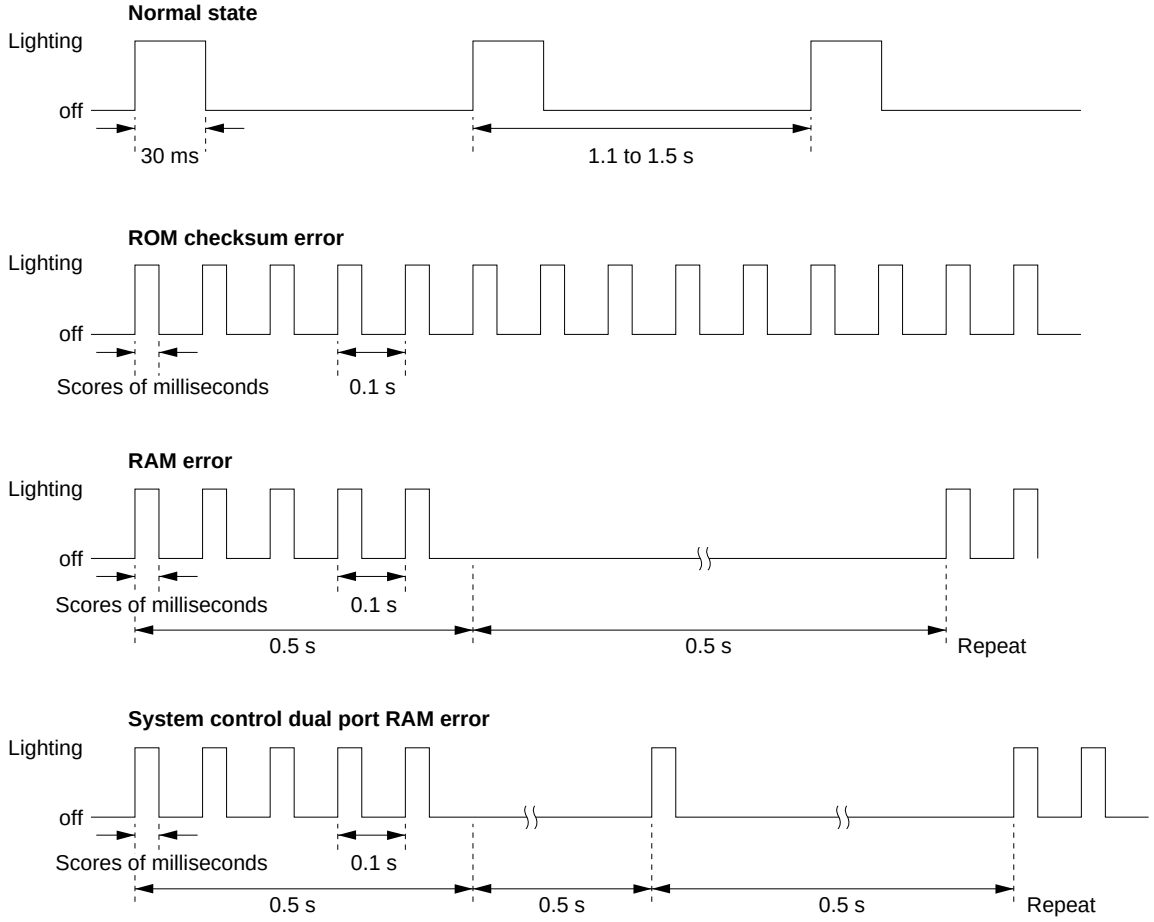
2-11. Information of LEDs on Circuit Boards

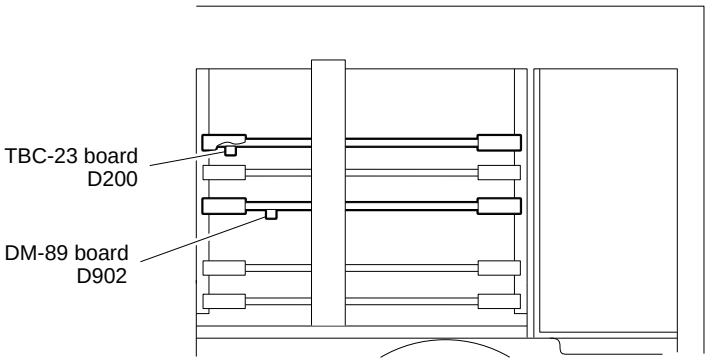


SS-63 board

LED No.	Name	Color	Description	Normal state
D108	SV	Amber	Represents the result of communication check to ROM and RAM after power on by blinking state.	Blinks
D112	TRVR	Amber	Lights when the tracking VR is enable.	Stays unlit
D301	DRUM	Amber	Blinks during the drum microcomputer (IC314 on SS-63 board) under normal operation. Usually lights for 30 ms at intervals of 1.1 to 1.5 s. The blinking interval is inverted when the drum is locked.	Blinks
D1102	SY1 STS1	Green	Blinks when SYS1 CPU operates normally.	Blinks
D1103	SY1 STS2	Green	Lights when between SYS1 and KEY PANEL (KY-364) communicates normally. Turn off when between SYS1 and KEY PANEL (KY-364) communicates abnormally.	Lights
D1104	MAINTE	Green	Lights during maintenance mode is performed.	Stays unlit
D1105	SY1 ERR	Red	Lights SYS1 CPU does not operate normally. Blinks when between SYS1 CPU and other CPU (SYS2, KY, etc.) commmunicates abnormally.	Stays unlit
D1902	SY2 STS1	Green	Blinks when SYS2 CPU operates normally.	Blinks
D1903	SY2 STS2	Green	Lights when between SYS2 and SV CPU communicates normally. Turn off when between SYS2 and SV CPU communicates abnormally.	Lights
D1904	SY2 STS3	Green	Lights when between SYS2 and SYS1 CPU communicates normally. Turn off when between SYS2 and SYS1 CPU communicates abnormally.	Lights
D1905	SY2 ERR	Red	Lights when SYS2 CPU does not operate normally. Blinks when between SYS2 CPU and other CPU (SYS1, SV, etc.) communicate abnormally.	Stays unlit

Blinking pattern of D108 on SS-63 board





DM-89 board

LED No.	Name	Color	Description	Normal state
D902	ADJUST	Amber	Usually lights for scores of milliseconds at intervals of about 1 s. The blinking interval is inverted when the DM-89 board is in the adjustment mode: when switch S901-1 on DM-89 board is set to ON.	Blinks

TBC-23 board

LED No.	Name	Color	Description	Normal state
D200	TBC	Amber	Lights once a second during TBC microcomputer (on TBC-23 board) operates under normal condition.	Blinks

2-12. How to Take Out the Cassette when the Tape is Slacking

Note

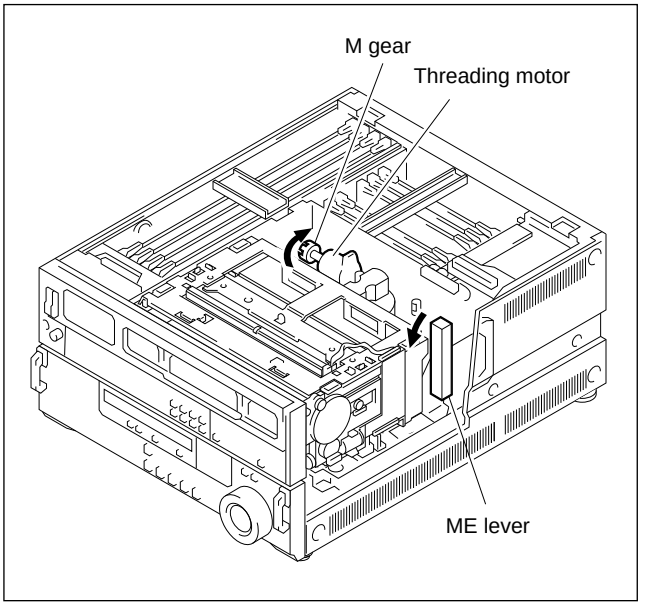
Turn off the power and unplug the power cord before starting the working.

When the tape is slacked in VTR, take out the cassette tape in the procedure below.

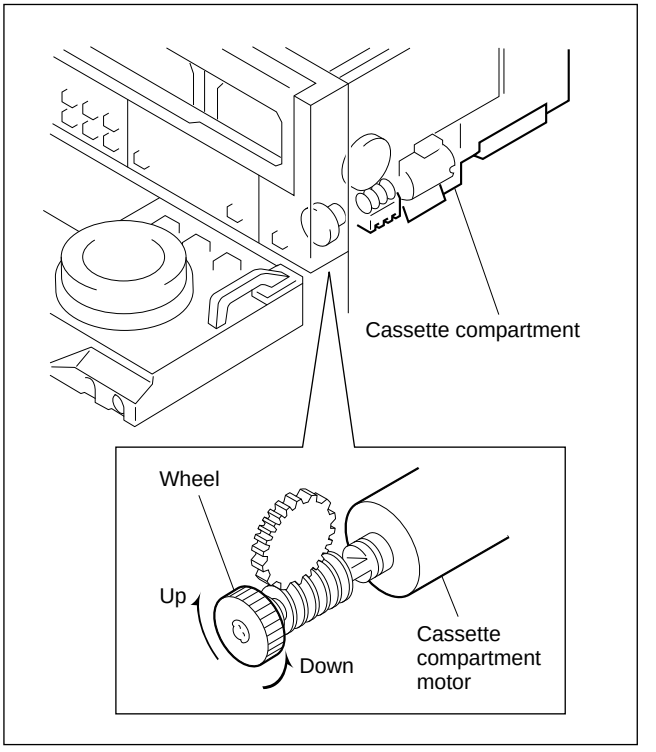
Note

The tape may be damaged. Take out the cassette tape with care.

1. Turn off the POWER switch.
2. Remove the upper lid.
   (Refer to "2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation".)
3. Remove the plate MD assembly.
   (Refer to "2-4. Plate MD Assembly removal/Installation".)
4. Rotate the M gear of the threading motor block in the direction of the arrow with fingers by about a half turn and slacken the tape.
5. Shift the ME lever toward the front panel side and wind the tape inside the cassette.



6. Repeat steps 4 and 5 until the tape is wound completely.
7. Take both side handles of a lower control panel and pull them slightly forward, then pull them more strongly. Then the lower control panel tilts upward (to 90˚ position).
8. Turn the wheel of the cassette compartment motor show in the figure clockwise until the cassette is ejected completely.

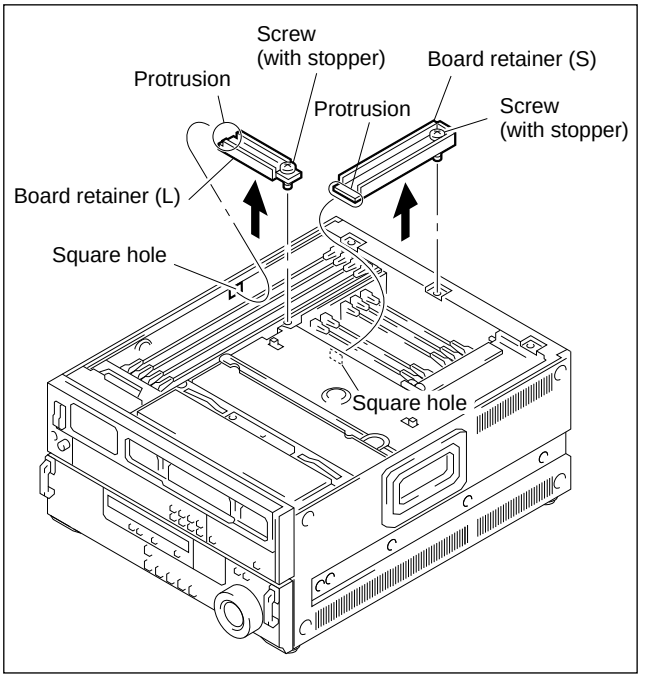


2-13. Pulling Out/Insertion of Plug-in Board

Notes

- Turn off the power and unplug the power cord before starting the removal/installation.
- When the plug-in board is replaced, refer to Section 6 “Replacement of Plug-in Boards”.

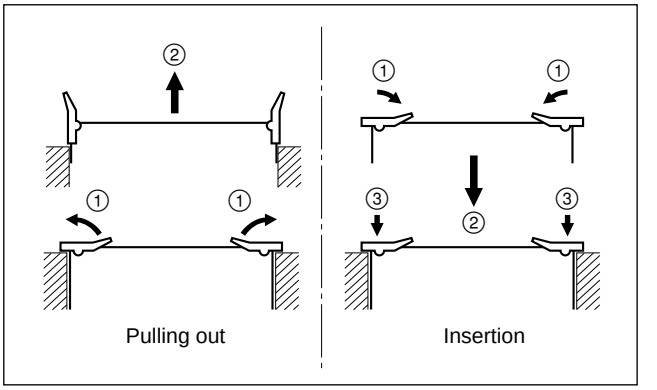
1. Remove the upper lid.
   (Refer to “2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation”.)
2. Loosen a screw, and remove the board retainer (L) or (S).



3. When removing the TBC-23 or TBC-24 board, disconnect the connected harness from its board.

   TBC-23 board : CN1
   TBC-24 board : CN1

4. Pull up the eject levers on the board to the direction of the arrows. (Disconnect it from motherboard.)
5. Hold the eject levers and pull out slowly the board.



6. When removing the APR-12 or EQ-56 board, disconnect the connected harness from its board.

APR-12 board:	CN500 (A-1)	3P Red
	CN600 (G-1)	3P Yellow
EQ-56 board:	CN100 (B-7)	6P White
	CN500 (A-4)	4P White
	CN1500 (A-6)	4P Black

For insertion, perform in the reverse procedures of pulling out.

Notes

- After board insertion, push the two eject levers simultaneously and connect the plug-in board firmly to the connector on the motherboard (MB-648 board).
- To install the board retainer, tighten the screw after inserting the protrusion of the board retainer into the square hole of chassis.

2-14. Fixtures and Adjustment Equipments List

2-14-1. Equipments for Adjustment

It is recommended to use the equipments listed below or the equivalents.
Each equipment is available as a standard product.

Note

The equipment that is used only in the maintenance manual part 2 is also described.

Equipment	Model name	Remarks
Spectrum analyzer	Advantest R3261A	With external trigger function bandwidth: more than 100 MHz
Oscilloscope	Tektronix 2465B	
Waveform /vector monitor	Tektronix 1750 or 1780R	For 525/60
	Tektronix 1751 or 1781R	For 625/50
Audio analyzer	Tektronix AA501A (OP.02)	For measuring distortion and levels
Audio level meter	Hewlett-Packard HP3400A	
Frequency counter	Advantest TR5821AK	
Digital voltmeter	Advantest TR6845	
Monitor with serial digital input	Sony BVM-1311 (with optional accessory BKM-2085-14)	(For 525/60 system)
	Sony BVM-1411P (with optional accessory BKM-2085-14)	(For 625/50 system)
Network analyzer	Anritsu MS-420B	

2-14-2. Fixtures

Note

The tools that are used only in the maintenance manual part 2 are also described.

Fig. No.	Part No.	Description	[Inscription No.]	For use
1	J-6035-070-A	Extraction tool (for PLCC socket)	—	Extraction of IC (PLCC type)
2	J-6080-029-A	Small dental mirror (round type ø12)	—	Cassette pillar height adjustment
3	J-6086-570-A	Reference flat plate	[SL-657]	AT head zenith adjustment
4	J-6152-450-A	Wire clearance check gauge set	—	Clearance check
5	J-6251-090-A	Torque screwdriver's hexagonal bit (d=2.5 mm, l=120 mm)	—	Tightening screws to fix a drum assembly and upper drum asssembly
	J-6323-440-A	Torque screwdriver's hexagonal bit (d=0.89 mm, l=50 mm)	—	Tightening screws to fix a tension regulator roller
6	J-6323-420-A	Torque screwdriver's bit (+2 mm, l=75 mm)	—	Tightening screws to fix a brush/slip ring assembly
	J-6323-430-A	Torque screwdriver's bit (+3 mm, l=90 mm)	—	Tightening screws to fix a reel motor assembly or a ring roller
7	J-6252-510-A	Torque screwdriver (6 kg・cm)(0.6 N・m)	[JB-5251]	Tightening screws
	J-6252-520-A	Torque screwdriver (12 kg・m)(1.2 N・m)	[JB-5252]	Tightening screws
8	J-6269-810-A	Extension board (S), EX-377	—	Extension of the small-sized plug-in board (DM, TBC)
9	A-8277-211-A	Extension board (L), EX-555	—	Extension of the large-sized plug-in board
10	A-8277-212-A	Extension board (S), EX-556	—	Extension of the small-sized plug-in board (EQ, APR)
11	J-6320-870-A	Reel motor shaft slantness check fixture	[MW-087]	Reel motor shaft slantness adjustment
12	J-6320-880-A	Cassette reference plate (L)	[MW-088]	Reel table height adjustment, Reel motor shaft slantness adjustment
13	J-6322-610-A	Tape guide adjustment driver	[MW-261]	Tape path adjustment
14	J-6329-350-A	Reel table height gauge	[MW-935]	Reel table height adjustment
15	1-952-684-11	Extension cable (14P)	—	Extension of the TBC-23 or TBC-24 board
16	1-957-071-11	Extension cable set	—	Extension of the power supply unit
17	3-184-527-01	Cleaning cloth (15 cm × 15 cm)	—	Cleaning
18	7-432-114-11	Locking compound (200 g)	—	Inhibits loosening of screws
19	7-661-018-18	Diamond oil NT-68 (50 ml)	—	
20	7-651-000-10	Sony grease SGL-601 (50 g)	—	
21	7-700-736-01	L-shaped hexagonal wrench (d=1.27 mm)	—	
	7-700-736-05	L-shaped hexagonal wrench (d=1.5 mm)	—	
	7-700-736-06	L-shaped hexagonal wrench (d=0.89 mm)	—	
22	7-700-766-04	Hexagonal wrench driver (d=2.5 mm)	—	
23	8-960-075-01	Alignment tape, SR5-1	—	Video/audio adjustments (for 525/60 system)
	8-960-075-11	Alignment tape, SR2-1	—	Servo adjustment (for 525/60 system)
	8-960-075-51	Alignment tape, SR5-1P	—	Video/audio adjustments (for 625/50 system)
	8-960-075-61	Alignment tape, SR2-1P	—	Servo adjustment (for 625/50 system)
24	*1 8-960-096-01	Alignment tape, CR2-1B	—	Tracking adjustment (for analog NTSC)
	*1 8-960-096-41	Alignment tape, CR5-1B (metal particle tape)	—	Video adjustment (for analog NTSC)
	*2 8-960-096-51	Alignment tape, CR2-1B PS	—	Tracking adjustment (for analog PAL)
	*1 8-960-097-44	Alignment tape, CR5-2A (oxide tape)	—	Betacam video adjustment (for analog NTSC)
	*1 8-960-097-45	Alignment tape, CR8-1A (oxide tape)	—	Betacam audio adjustment (for analog NTSC)
	*2 8-960-096-91	Alignment tape, CR5-1B PS (metal particle tape)	—	Video adjustment (for analog PAL)
	*2 8-960-096-86	Alignment tape, CR8-1B PS (metal particle tape)	—	Audio adjustment (for analog PAL)
	*2 8-960-098-44	Alignment tape, CR5-2A PS (oxide tape)	—	Video adjustment (for analog PAL)
	*2 8-960-098-45	Alignment tape, CR8-1A PS (oxide tape)	—	Audio adjustment (for analog PAL)
25	9-911-053-00	Thickness gauge	—	Clearance check
26	9-919-573-01	Cleaning liquid	—	Cleaning
27	J-6332-240-A	VISC phase adjusting tool	—	VISC adjustment for PAL system

*1: DNW-A22 only
*2: DNW-A22P only

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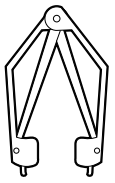
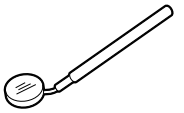
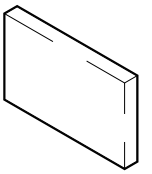
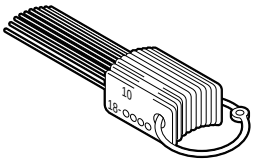
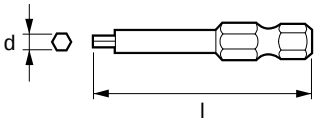
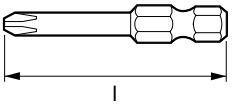
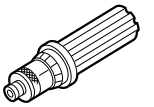
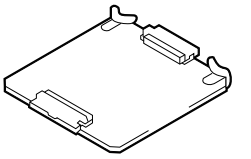
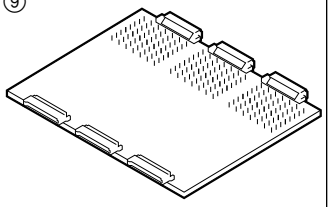
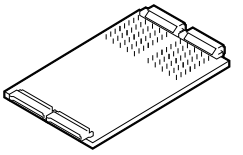
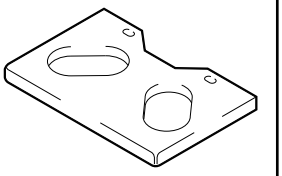
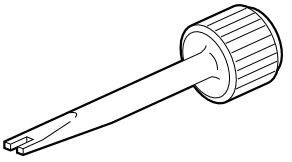
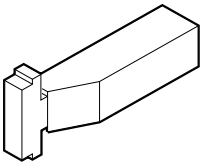
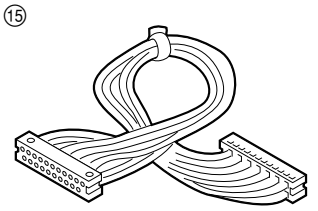
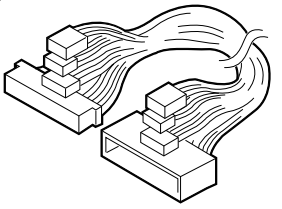
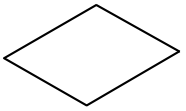
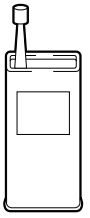
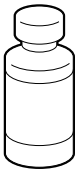
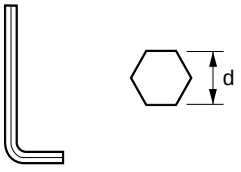
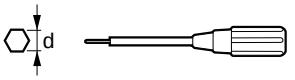
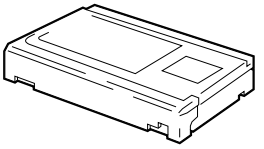
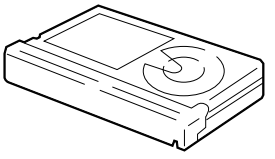
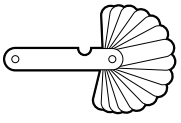
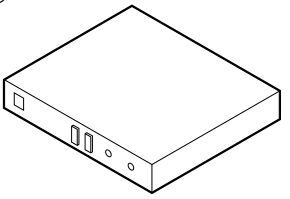
① 	② 	③ 	④ 
⑤ 	⑥ 	⑦ 	⑧ 
⑨ 	⑩ 	⑪	⑫ 
⑬ 	⑭ 	⑮ 	⑯ 
⑰ 	⑱ 	⑲ 	⑳
㉑ 	㉒ 	㉓ 	㉔ 
㉕ 	㉖	㉗ 	

2-15. ISR

2-15-1. Overview

This unit corresponds to ISR (Interactive Status Reporting) function. When this unit is connected to the personal computer which activates Sony's ISR application software, the status of this unit or the contents of a generated error can be intensively monitored and managed on the monitor screen of a personal computer. The data displayed on the monitor screen can be stored as a file.

Note

Please contact to Sony's service organization about ISR application software, method of using or installing the personal computer which can use this software, and the method of concrete operating.

The major functions are as shown below.

Monitor functions

- Error code and error message (Refer to Section 3.)
- Display of operation status (Equivalent to the display on the video monitor.)

Management functions

- Model name, serial No., destination
- ROM version

Indicating item	Description
Manufacture	Displayed as SONY.
Model name	Displays the model name.
Serial No.	Displays the serial No.
Divece ID	Can give an arbitrary name to this unit and register it.
Destination	Displays the destination J (For Japan), SY (For world-wide)
ROM	Displays the information of the ROMs mounted in this unit.

Inspection functions

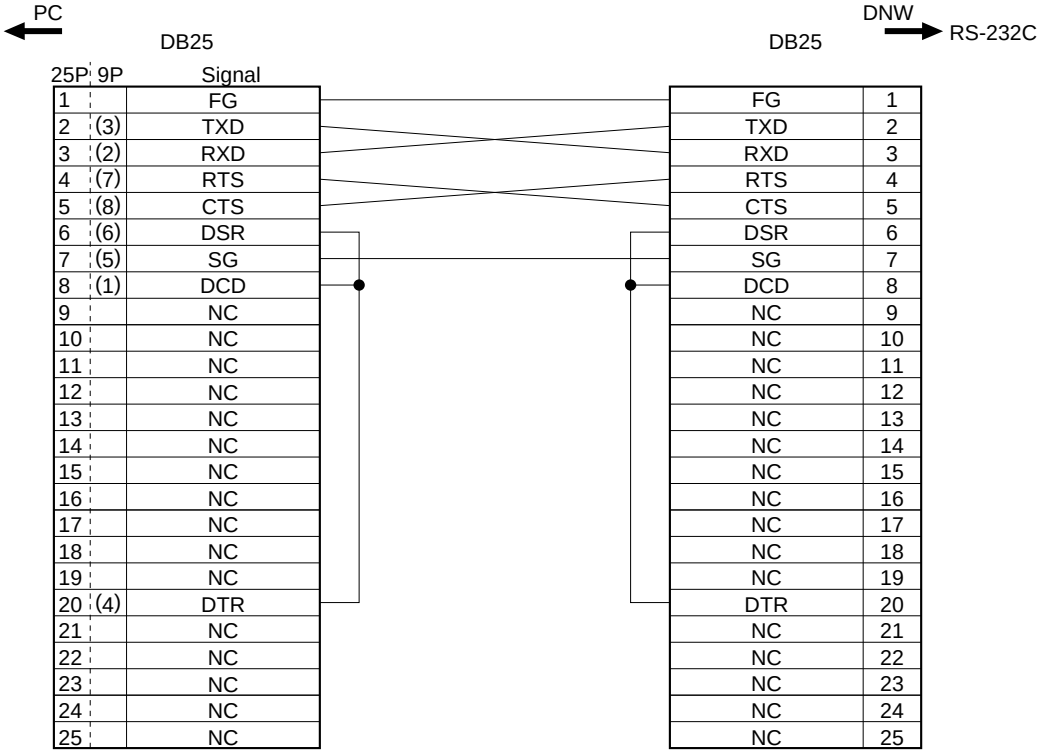
- Hours meter (Equal to hours meter of the setup menu)
- Error logger

2-15-2. Information of Connecting Cable

Prepare the cables by refering the following information.

1. For connecting directly to a personal computer

Use the RS-232C cross cable.

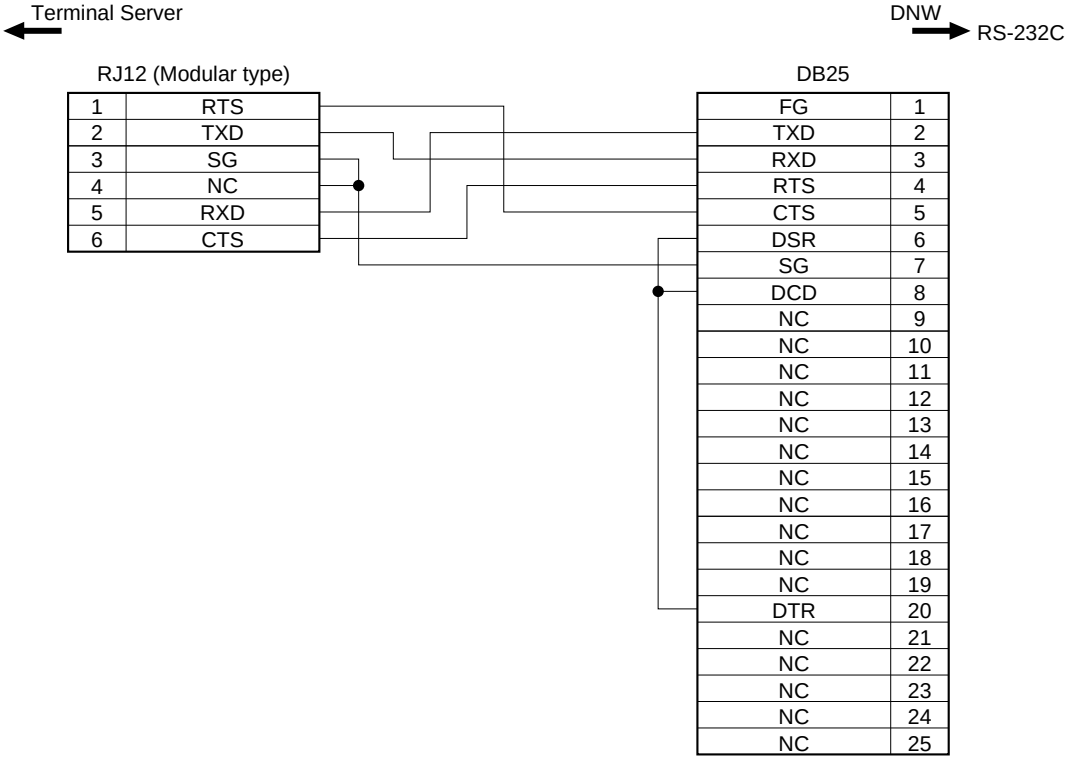


( ); Pin number for 9-pin connector

2. For connecting to a personal computer via LAN (Terminal server: 6-pin port)

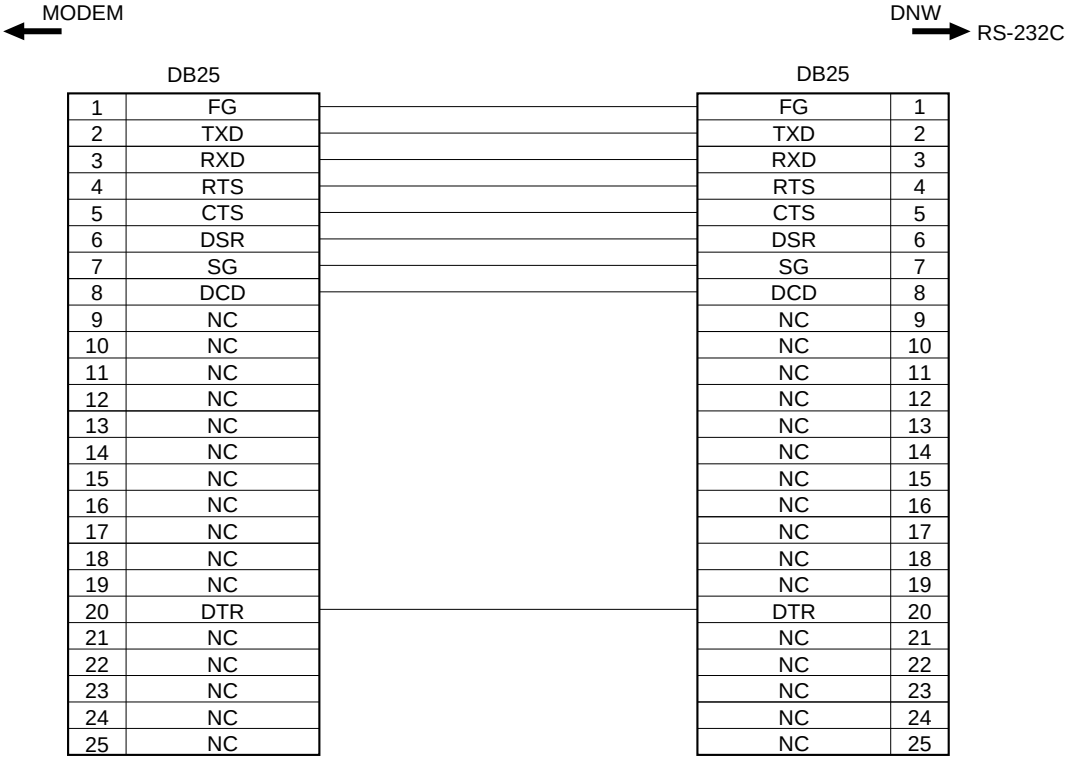
Note

The connection varies depend on the terminal server. Be sure to check the pin assignment of terminal server side, and follow it.



3. For connecting to a personal computer via modem

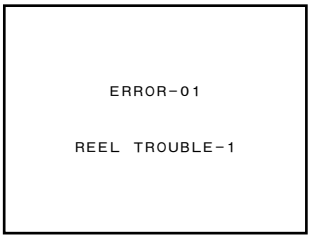
Use the RS-232C straight cable.



Section 3
Error Message

3-1. Overview of Error Message

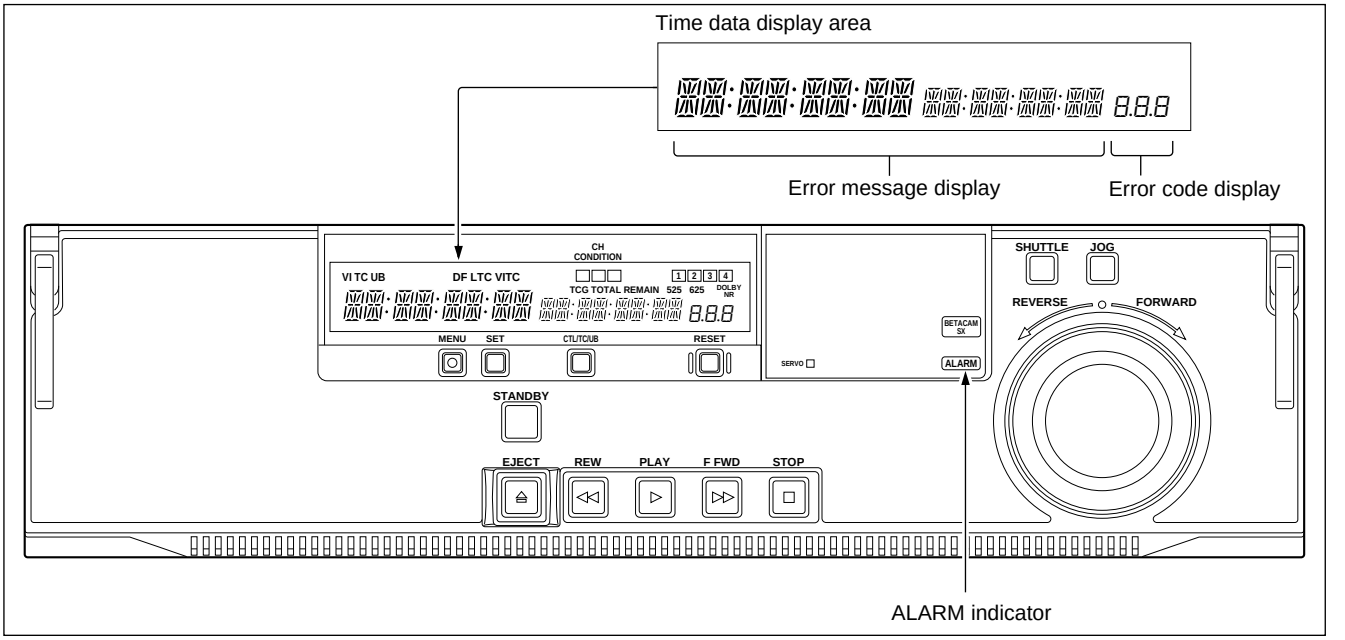
This unit has self-diagnostics function.
When trouble is detected, an ALARM indicator is lighted immediately on the lower control panel, and an error message and error code are displayed in the time data display area and event display area.
Also, an error code and error message are superimposed on the video monitor connected to the VIDEO OUTPUT COMPOSITE 2 connector. Furthermore, as for the some error codes, object which error occurred is displayed as sub error message on the video monitor.



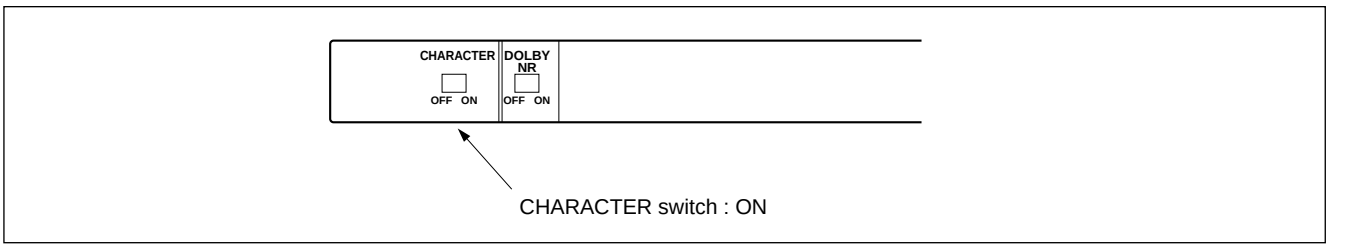
Ex. Superimposed on Video Monitor

Notes

- To superimpose the error message and code on the video monitor, the CHARACTER switch on the sub control panel must be set to ON.
- There are the error messages without error code. These messages are only displayed on the time data display area.
- The error messages with error code are recorded to NV-RAM (Non-volatile RAM) as the error logging data.
  (Refer to Section 4 for the error logging data.)
- The messages on the time data display area differ from the messages which are superimposed on the video monitor in some items.



Error Message/Code Display Area and ALARM Indicator



CHARACTER Switch on Sub Control Panel

Error messages are described on Section 3-2 in the order of list.

Error List

Code	Message on time data display area	Page	Description
–	NO COMMUNICATION	3-4	Abnormality in the interface between the lower control panel (KY-364 board) and SYS1 CPU (SS-63 board) is detected in the lower control panel side.
01	REEL TROUBLE	3-4	Tape slacking is detected in the threading or unthreading operation.
02	REEL TROUBLE	3-5	Tape slacking or tape breaking is detected in the SEARCH, FF, or REW mode.
03	REEL TROUBLE	3-6	Tape slacking, tape breaking, or supply or take-up reel locking is detected in the PLAY mode.
04	REEL TROUBLE	3-7	An malfunctional tape transport speed is detected in the FF or REW mode.
05	REEL TROUBLE	3-7	The malfunctional operation of the supply or take-up reel is detected during cassette insertion.
06	TAPE TENSION	3-8	Excessive tape tension is detected in the PLAY mode.
07	CAPSTAN TROUBLE	3-8	Malfunction of capstan motor is detected.
08	DRUM TROUBLE	3-9	Malfunction of drum motor is detected.
09	TH/UNTH MOTOR	3-9	Malfunction of threading or unthreading operation is detected.
0A	THREADING	3-10	It is detected that the tape top processing is not completed in the threading mode.
10	HUMID	3-10	Dew condensation is detected.
11	TAPE T/E SENSOR	3-11	The tape top and tape end are detected simultaneously.
12	TAPE TOP SENSOR	3-11	Malfunction of tape top sensor is detected.
13	TAPE END SENSOR	3-12	Malfunction of tape end sensor is detected.
14	FAN MOTOR	3-13	Malfunction of cooling fan motor is detected.
20	CASS COMP MOTOR	3-14	Malfunction of cassette compartment-up or down operation is detected.
21	REEL SFT MOTOR	3-14	Malfunction of movement of the reel table corresponding to the cassette size is detected.
22	REEL POS SENSOR	3-15	The L-cassette and S-cassette positions of the reel table are detected simultaneously.
23	THRED RING SENS	3-15	The thread end and unthread end states of the threading ring are detected simultaneously.
92	INTERNAL I/F 1	3-16	Abnormality in the interface between SYS1 CPU (on SS-63 board) and other CPU/MPU is detected.
96	SY NV-RAM ERROR	3-17	The abnormal operation of an NV-RAM (on SS-63 board) for the system control system is detected.
97	SV NV-RAM	3-18	The abnormal operation of an NV-RAM (on MS-50 board) for the servo system is detected.
98	RF NV-RAM ERROR	3-18	The abnormal operation of an NV-RAM (on EQ-56, DM-89, or TBC-23 board) for the RF system is detected.
99	INTERNAL I/F 2	3-19	Abnormality in the interface between SYS2 CPU (on SS-63 board) and SERVO CPU (on SS-63 board) or MPU (on EQ-56, DM-89, or TBC-23 board) is detected.

Notes

- Error codes 01 through 14 detect in both/one of the SS-63 and/or MS-50 boards.
  Error codes 20 through 23 detect in the MS-50 board.
  Error codes 92 through 99 detect in the SS-63 board.
- There are two error groups of error codes: VTR and OTHERS. If errors occur in both error groups, the error message of each group are switched at two-second intervals.
  Also, if multiple errors occur in error group, the priority level of each group display are as follows:
  VTR: 97, 02, 03, 04, 05, 07, 06, 01, 09, 08, 0A, 10, 11, 12, 13, 14, 20, 21, 22, 23
  OTHERS: 92, 96, 98, 99

3-2. Details of Error Messages

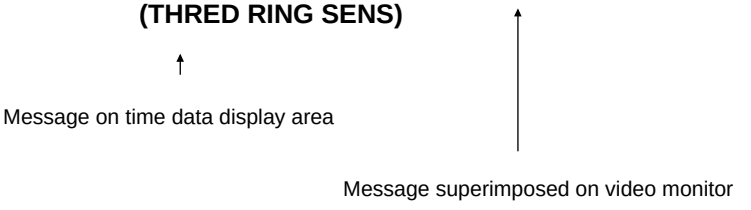
CAUTION

The “protection mode” described in this section means the servo control system automatically stops the tape transport and drum motor rotation, and maintains this state. The DNW cannot be automatically recovered to the normal state when the DNW once enters the protection mode. Be sure to turn the power on again under the absence of the cassette tape.
If the protection mode is entered with the cassette tape inserted, take out the cassette tape manually with reference to “2-12. How to Take Out the Cassette when the Tape is Slacking”. Never turn the power on again without taking out the cassette tape. This may damage the tape.

Note

The messages on the time data display area differ from the messages which are superimposed on the video monitor in some items. In this section, each message indicates as following example.

Ex.: ERROR-23 THREADING RING POSITION ERROR
(THRED RING SENS)



(NO COMMUNICATION)

Description: Abnormality in the interface between the lower control panel's MPU (on the KY-364 board) and SYS1 CPU (SS-63 board) was detected.

Note

This error message is only displayed on the time data display area in that the abnormality of the interface is detected in the lower control panel side.

Detecting condition: When the lower control panel's MPU (IC104 on KY-364 board) is received no interface signal from SYS1 CPU (IC704 on SS-63 board) for more than two seconds.

Possible causes:
- Cable connection defect or disconnection
- Line receiver/transceiver (IC102 on KY-364 board) trouble
- SIO (IC1102 on SS-63 board) trouble

Protecting operation: None

ERROR-01 REEL TROUBLE - 1 (REEL TROUBLE)

Description: Tape slacking was detected during threading or unthreading.

Detecting conditions:
1) When no take-up reel FG can be detected in the unthread operation just after activation.
2) When the relation between the take-up reel FG and threading FG is out of the specification in operations other than unthread just after activation.

Sub error message: None

Possible causes:
- Cassette compartment trouble or installation defect
  - ✻ The reel did not rotate because the cassette was lifted-up from the specified position.
- Clearance adjustment defect of take-up reel FG detection block
- Take-up reel FG waveform shaper circuit (MS-50 board) trouble
- Take-up reel motor trouble
- Take-up reel motor drive circuit (DR-315 board) trouble
- Take-up reel brake trouble
- Take-up reel brake solenoid drive circuit (MS-50 board) trouble
- Servo adjustment defect on take-up reel
- Harness disconnection
- Take-up reel table height adjustment defect

Protecting operation: Enters the protection mode.

CAUTION

Be sure to take out the cassette manually (refer to Section 2-12). Do not turn the power on again without taking out the cassette. This may damage the tape.

ERROR-02 REEL TROUBLE - 2 (REEL TROUBLE)

Description: Tape slacking or tape breaking was detected in SEARCH, FF, or REW mode.

Detecting conditions:
1) When the take-up value is lower than the specified value with respect to the tape supply value.
2) When the relation among the capstan FG, supply reel FG, and take-up reel FG are out of the specification.
3) When the supply reel and take-up reel do not coincide in rotation direction continuously for more than five seconds.

Sub error message: None

Possible causes:
- Cassette compartment trouble or installation defect
  - ∗ The reel did not rotate because the cassette was lifted-up from the specified position.
- Clearance adjustment defect of supply or take-up reel FG detection block
- Supply or take-up reel FG waveform shaper circuit (MS-50 board) trouble
- Supply or take-up reel motor trouble
- Supply or take-up reel motor drive circuit (DR-315 board) trouble
- Capstan motor trouble
- Capstan motor drive circuit (DR-315 board) trouble
- Capstan FG waveform shaper circuit (MS-50 board) trouble
- Take-up torque insufficiency during REW due to supply tension sensor or supply tension detect circuit (MS-50 board) trouble
- Servo adjustment defect on capstan, reel(s), and supply tension sensor
- Supply or take-up reel brake trouble
- Supply or take-up reel brake solenoid drive circuit (MS-50 board) trouble
- Harness disconnection
- Reel table height adjustment defect
- Tape path and drum troubles
- Tape abnormality (The winding state has a problem.)

Protecting operation: Enters the protection mode. The normal state may be returned after the protection mode is entered at the end of the tape.

CAUTION

Be sure to take out the cassette manually (refer to Section 2-12). Do not turn on the power again without taking out the cassette. This may damage the tape.

ERROR-03 REEL TROUBLE - 3 (REEL TROUBLE)

Description: Tape slacking, tape breaking, or supply or take-up reel locking was detected in the PLAY mode.

Detecting conditions:
1) When the take-up value is lower than the specified value with respect to the tape supply value.
2) When the relation among the capstan FG, supply reel FG, and take-up reel FG are out of the specification.
3) When the supply reel and take-up reel do not coincide in rotation direction continuously for more than five seconds.
4) When the tension value calculated from the supply tension sensor output is less than 15 g continuously for more than three seconds.

Sub error message: None

Possible causes:
- Cassette compartment trouble or installation defect
  - ✻ The reel did not rotate because the cassette was lifted-up from the specified position.
- Clearance adjustment defect of supply or take-up reel FG detection block
- Supply or take-up reel FG waveform shaper circuit (MS-50 board) trouble
- Supply or take-up reel motor trouble
- Supply or take-up reel motor drive circuit (DR-315 board) trouble
- Capstan motor trouble
- Capstan motor drive circuit (DR-315 board) trouble
- Capstan FG waveform shaper circuit (MS-50 board) trouble
- Servo adjustment defect on capstan, reel(s), and supply tension sensor
- Supply or take-up reel brake trouble
- Supply or take-up reel brake solenoid drive circuit (MS-50 board) trouble
- Harness disconnection
- Reel table height adjustment defect
- Tape path and drum troubles
- Tape abnormality (The winding state has a problem.)

Protecting operation: Enters the protection mode.

CAUTION

Be sure to take out the cassette manually (refer to Section 2-12). Do not turn on the power again without taking out the cassette. This may damage the tape.

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ERROR-04 REEL TROUBLE - 4 (REEL TROUBLE)

Description: Abnormal tape transport speed was detected in the FF or REW mode.

Detecting condition: When the tape speed calculated from the supply reel FG and take-up reel FG is under a half of the specified tape speed continuously for more than four seconds.

Sub error message: None

Possible causes:
- Cassette compartment trouble or installation defect
  ∗ The reel did not rotate because the cassette was lifted-up from the specified position.
- Clearance adjustment defect of supply or take-up reel FG detection block
- Supply or take-up reel motor trouble
- Supply or take-up reel FG waveform shaper circuit (MS-50 board) trouble
- Supply or take-up reel motor drive circuit (DR-315 board) trouble
- Servo adjustment defect on supply or take-up reel
- Supply or take-up reel brake trouble
- Supply or take-up reel brake solenoid drive circuit (MS-50 board) trouble
- Harness disconnection
- Reel table height adjustment defect
- Tape path and drum troubles
- Tape abnormality (The winding state has a problem.)

Protecting operation: Stops the tape transport and enters the rest state.

ERROR-05 REEL TROUBLE - 5 (REEL TROUBLE)

Description: Abnormal supply reel or take-up reel operation was detected in a diagnosis during cassette insertion.

Detecting conditions:
1) When the supply reel FG or take-up reel FG count is less than the specified value with the reel rotated.
2) When the supply reel FG or take-up reel FG count is more than the specified value with the reel stopped.

Sub error message: None

Possible causes:
- Supply or take-up reel FG sensor (SE-344 board) trouble or clearance adjustment defect
- Supply or take-up reel FG waveform shaper circuit (MS-50 board) trouble
- Supply or take-up reel motor drive circuit (DR-315 board) trouble
- Servo adjustment defect on supply or take-up reel
- Supply or take-up reel brake trouble
- Supply or take-up reel brake solenoid drive circuit (MS-50 board) trouble
- Harness disconnection

Protecting operation: Ejects the cassette.

ERROR-06 TAPE TENSION ERROR (TAPE TENSION)

Description: Excessive tension was detected in the PLAY mode.

Detecting condition: When the tension value calculated from supply tension sensor output is more than 55 g continuously for more than three seconds.

Sub error message: None

Possible causes:
- Cassette compartment trouble or installation defect
  ✻ The reel did not rotate because the cassette was lifted-up from the specified position.
- Supply tension sensor or its related circuit (MS-50 board) trouble
- Supply reel motor trouble
- Supply reel motor drive circuit (DR-315 board) trouble
- Servo adjustment defect on supply reel and supply tension sensor
- Supply reel brake trouble
- Supply reel brake solenoid drive circuit (MS-50 board) trouble
- Harness disconnection

Protecting operation: Stops the tape transport and enters the rest state.

ERROR-07 CAPSTAN TROUBLE (CAPSTAN TROUBLE)

Description: Malfunction of capstan motor was detected.

Detecting conditions:
1) When the capstan FG count is less than the specified value in a diagnosis during cassette insertion.
2) When the frequency calculated from the capstan FG is out of the specification in the PLAY, or SEARCH mode.
3) When CAPSTAN FG(A) NOR signal and CAPSTAN FG(B) NOR signal interruption are not normal for about 40 ms in the PLAY mode.

Sub error message: None

Possible causes:
- Capstan motor trouble
- FG sensor trouble in capstan motor
- Capstan motor drive circuit (DR-315 board) trouble
- Capstan motor FG waveform shaper circuit (MS-50 board) trouble
- Capstan FG duty adjustment defect

Protecting operations: Ejects the cassette for No. 1 in detecting conditions.
Stops the tape transport and enters the rest state for No. 2 and No. 3 in detecting conditions.

ERROR-08 DRUM TROUBLE (DRUM TROUBLE)

Description: Malfunction of drum motor was detected.

Detecting condition: When the drum FG cycle is shifted more than about ±30 % continuously for more than 10 seconds as compared with during normal rotation.

Sub error message: None

Possible causes:
- Drum motor trouble
- Drum microcomputer (IC314 on SS-63 board) trouble
- Drum motor drive circuit (DR-315 board) trouble
- Drum FG/PG waveform shaper circuit (DR-315 board) trouble
- Assembly defect during upper drum replacement

Protecting operation: Stops the tape transport and enters the rest state in the unthread end state.

ERROR-09 TH/UNTH MOTOR TIMEOUT (TH/UNTH MOTOR)

Description: Malfunction of threading or unthreading operation was detected.

Detecting conditions:
1) When no operation is completed within about six seconds after operation start.
2) When no threading FG is output within about 0.4 second during threading motor drive.
3) When states other than unthread end are continued for more than six seconds in case that the unit should be in the unthread end state.

Sub error message: None

Possible causes:
- Unthread end sensor (TR-79 board) trouble
- Thread end sensor (TR-79 board) trouble
- Thread end/unthread end input port (IC1 on MS-50 board) trouble
- Threading motor trouble
- Threading FG sensor (PTC-54 board) trouble
- Threading FG waveform shaper circuit (MS-50 board) trouble
- Threading motor drive circuit (DR-315 board) trouble
- Threading mechanism trouble

Protecting operations: Ejects the cassette during cassette insertion or ejection.
Enters the protection mode during tape threading/unthreading.
Stops the tape transport and enters the rest state in cases except the above.

ERROR-0A THREADING TROUBLE (THREADING)

Description: It was detected that the tape top processing in the thread state is not completed.

Detecting condition: When the tape top is detected again after it is processed.

Tape top processing

In this processing, the tape is slightly forwarded without taking out the tape after unthread because the tape top was detected during threading.
(Short FF)

Sub error message: None

Possible causes:
- Take-up reel motor trouble
- Servo adjustment defect on take-up reel
- Take-up reel motor drive circuit (DR-315 board) trouble
- Tape top sensor trouble
- Tape top detection circuit (MS-50 board) trouble
- Tape top input port (IC115 on SS-63 board) trouble
- Tape abnormality

Protecting operation: Enters the rest state in the unthread end state.

ERROR-10 HUMID (HUMID)

Description: Dew condensation was detected.

Detecting condition: When the condensation sensor detects dew condensation continuously for about two seconds.

Sub error message: None

Possible causes:
- Actual dew detection (When the operating environment rapidly changes from low temperature to high temperature and high humidity)
- Condensation sensor trouble
- Dew input port (IC1 on MS-50 board) trouble

Protecting operations: Prohibits the cleaning roller operation.
Stops the tape transport and enters the rest state in the unthread end state when the tape is threaded in states other than PLAY mode.
Prohibits the tape threading.
Prohibits the cassette insertion.

ERROR-11 TAPE TOP/END SENSOR TROUBLE (TAPE T/E SENSOR)

Description: The tape top and tape end were detected simultaneously.

Detectiong condition: When the simultaneous detection of the tape end and tape top is continued for more than seven seconds.

Sub error message: None

Possible causes:
- Tape top sensor or tape end sensor trouble
- Tape top or tape end detection circuit (MS-50 board) trouble
- Tape top/tape end input port (IC115 on SS-63 board) trouble
- Harness disconnection

Protecting operation: Stops the tape transport and enters the rest state during tape transport.

ERROR-12 TAPE TOP SENSOR TROUBLE (TAPE TOP SENSOR)

Description: Malfunction of tape top sensor was detected.

Detecting condition: When the tape top is detected continuously for more than seven seconds.

Sub error message: None

Possible causes:
- Tape top sensor trouble
- Tape top detection circuit (MS-50 board) trouble
- Tape top input port (IC115 on SS-63 board) trouble
- Harness disconnection
- The tape cannot move at the tape top due to troubles other than the tape sensor.

Protecting operations: In the FF mode, continues the operation until the tape end is detected. Stops the tape transport and enters the rest state when the tape end is detected.
During tape transport in forward direction, the FF mode can be entered only while the total tape quantity is observed.
Stops the tape transport and enters the rest state during tape transport except the above.

ERROR-13 TAPE END SENSOR TROUBLE (TAPE END SENSOR)

Description: Malfunction of tape end sensor was detected.

Detecting condition: When the tape end is detected continuously for more than seven seconds.

Sub error message: None

Possible causes:
- Tape end sensor trouble
- Tape end detection circuit (MS-50 board) trouble
- Tape end input port (IC115 on SS-63 board) trouble
- Harness disconnection
- The tape cannot move at the tape end due to troubles other than the tape sensor.

Protecting operations: In the REW mode, continues the operation until the tape top is detected. Stops the tape transport and enters the rest state when the tape top is detected.
During the tape transport in reverse direction, the REW mode can be entered only while the total tape quantity is observed.
Stops the tape transport and enters the rest state during tape transport except the above.

ERROR-14 FAN MOTOR TROUBLE (FAN MOTOR)

Description: Malfunction of cooling fan motor was detected.

CAUTION

If this error occurred, stop immediately operation of the unit, and turn off the power.
If the unit uses continuously under the fan is stopped state, overhearting inside the unit can cause a fire or a failure.

Detecting condition: When the fan motor FG frequency is less than the specified value continuously for more than one second.

Sub error message: None

Possible causes:
- Fan motor trouble
- Fan motor FG input port (IC115 or IC500 on SS-63 board) trouble
- Fan motor control port (IC500 on SS-63 board) trouble
- Fan motor power switch circuit (MB-648 board) trouble

Protecting operation: None

Note

This unit has four fan motors.
When the above detecting condition is satisfied by any fan motor, this error occurs.
Relations of fan motors and operation state, ports, power switch circuit are as follows.

Use	Operation sate	FG input port	Control port	Power switch circuit
For rear	Always rotating	IC500/SS-63 board	None	None
For EQ-56 board	Always rotating	IC500/SS-63 board	IC500/SS-63 board	Q4 and Q5/MB-648 board
For mechanical deck	Always rotating	IC115/SS-63 board	IC500/SS-63 board	Q1 and Q2/MB-648 board
For power supply unit	Always rotating	IC115/SS-63 board	None	None

ERROR-20 CASSETTE COMPARTMENT MOTOR LOCK (CASS COMP MOTOR)

Description: Malfunction of cassette compartment-up or down operation was detected.

Detectiong condition: When no operation is completed within about six seconds after operation start.

Sub error message: None

Possible causes:
- Cassette compartment block trouble
- Cassette compartment motor drive circuit (DR-315 board) trouble
- Cassette-down sensor (CL-29 board) trouble
- Cassette-down input port (IC1 on MS-50 board) trouble

Protecting operation: Stops the movement of the cassette compartment and reel table until a cassette eject button is pushed.

ERROR-21 REEL SHIFT MOTOR LOCK (REEL SFT MOTOR)

Description: Malfunction of movement of the reel table corresponding to the cassette size was detected.

Detecting condition: When no operation is completed within about six seconds after operation start.

Sub error message: None

Possible causes:
- Reel shift mechanism trouble
- Reel shift motor trouble
- Reel shift motor drive circuit (DR-315 board) trouble
- Reel position sensor (PTC-71 board) trouble (S position sensor or L position sensor)
- Reel position input port (IC1 on MS-50 board) trouble

Protecting operation: Stops the movement of the reel table and ejects the cassette during cassette loading.

ERROR-22 REEL POSITION SENSOR TROUBLE (REEL POS SENSOR)

Description: The L and S cassette positions of the reel table were detected simultaneously.

Detecting condition: When the L and S position sensors detect the L and S cassette positions, respectively at the same time.

Sub error message: None

Possible causes:
- S position sensor (PTC-71 board) trouble
- L position sensor (PTC-71 board) trouble
- Reel position input port (IC1 on MS-50 board) trouble

Protecting operation: If possible, ejects the cassette, when an error occurs during cassette insertion.
Prohibits the cassette insertion.

ERROR-23 THREADING RING POSITION ERROR (THRED RING SENS)

Description: The thread end and unthread end states were detected simultaneously.

Detecting condition: When the thread end and unthread end sensors detect the thread end and unthread end states, respectively at the same time.

Sub error message: None

Possible causes:
- Thread end sensor (TR-79 board) trouble
- Unthread end sensor (TR-79 board) trouble
- Thread end or unthread end input port (IC1 on MS-50 board) trouble

Protecting operations: Ejects the cassette during cassette insertion or ejection.
Enters the protection mode during tape threading/unthreading.
Stops the tape transport and enters the rest state in cases except the above.

ERROR-92 INTERNAL INTERFACE ERROR 1 (INTERNAL I/F 1)

Description: Abnormality was detected in the communication between SYS1 CPU (IC704 on SS-63 board) and other CPU/MPU.

Sub error messages and Detecting conditions:

SY2: When the SYS2 CPU (IC1505 on SS-63 board) initialization at turn on the power is in abnormal state.

KY: When the communication with KY-364 board's MPU (IC104) is in abnormal state.

FP: When the communication with FP-91 board's MPU (IC8) is in abnormal state.

Possible causes:

SY2:
- DIP switch (S1900 on SS-63 board) setting defect
- Common RAM (IC2501 on SS-63 board) or Common RAM controller (IC2500 on SS-63 board) trouble
- System control system SY-2 area (IC1500 series on SS-63 board) trouble

KY:
- Cable (between MB-648 board and KY-364 board) connection defect or disconnection
- Interface circuit (IC1102 through 1105 on SS-63 board) trouble
- Line receiver/transceiver (IC102 on KY-364 board) trouble
- KY-364 board's MPU (IC104) trouble

FP:
- Cable (between MB-648 board and FP-91 board) connection defect or disconnection
- MPU control interface circuit (IC1400 through 1402 on SS-63 board) trouble
- FP-91 board's MPU (IC8) trouble

Protecting operations: When the sub error message is "**SY2**", enters the protection mode.
When it is except above, displays only this error.

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ERROR-96 SY NV-RAM ERROR (SY NV-RAM ERROR)

Description: The abnormal operation of an NV-RAM (IC710 on SS-63 board) for the system control system was detected.

Sub error messages and Detecting conditions:

CURRENT SETUP: When the data error occurs in the setup menu current memory area during the data write or read .

SETUP BANK1: When the data error occurs in the setup menu bank 1 memory area during the data write or read.

SETUP BANK2: When the data error occurs in the setup menu bank 2 memory area during the data write or read.

SETUP BANK3: When the data error occurs in the setup menu bank 3 memory area during the data write or read.

SETUP BANK4: When the data error occurs in the setup menu bank 4 memory area during the data write or read.

ID CODE: When the data error occurs in the ID code memory area during the data write or read.

CALENDAR CLOCK: When the calendar/clock function stopped.

Possible causes:

- NV-RAM (IC710 on SS-63 board) trouble
- Address decoder (IC1107 on SS-63 board) trouble
- Backup battery inside NV-RAM is out of life

Protecting operations: When the error occurs in setting data of the setup menu, resets those data to the factory settings.
When the error occurs in ID code data, resets the data to 00 00 00 00.
When the error occurs at the calendar/clock function, resets the date and time data to ’96 11 01 00 00 00 (= Year, Month, Day, Hour, Minute, Second).

ERROR-97 SV NV-RAM ERROR (SV NV-RAM)

Description: The abnormal operation of an NV-RAM (MS-50 board) for the servo system was detected.

Detecting condition: When the checksum of NV-RAM data does not coincide during activation.

Sub error message: None

Possible cause: NV-RAM (IC9 on MS-50 board) trouble

Protecting operation: Enters the protection mode.

ERROR-98 RF NV-RAM ERROR (RF NV-RAM ERROR)

Description: The abnormal operation of an NV-RAM (EQ-56, DM-89, or TBC-23 board) for RF system was detected.

Sub error messages and Detecting conditions:

EQ: When the error occurs in an NV-RAM (IC900 on EQ-56 board) during the data write or read.

DM: When the error occurs in an NV-RAM (IC908 on DM-89 board) during the data write or read.

TBC: When the error occurs in an NV-RAM (IC200 on TBC-23 board) during the data write or read.

Possible causes: Trouble of an NV-RAM indicated by sub error message

Protecting operation: None

ERROR-99 INTERNAL INTERFACE ERROR 2 (INTERNAL I/F 2)

Description: Abnormality was detected in the communication between SYS2 CPU (SS-63 board) and SERVO CPU (SS-63 board) or MPU (on EQ-56, DM-89, or TBC-23 board).

Sub error messages and Detecting conditions:

SV: When the SERVO CPU (IC1505 on SS-63 board) initialization at turn on the power is in abnormal state.

EQ: When the communication with EQ-56 board's MPU (IC908) is in abnormal state.

DM: When the communication with DM-89 board's MPU (IC906) is in abnormal state.

TBC: When the communication with TBC-23 board's MPU (IC202) is in abnormal state.

Possible causes:

SV:
- DIP switch (S101 on SS-63 board) setting defect
- Common RAM (IC2502 on SS-63 board) or Common RAM controller (IC2503 on SS-63 board) trouble
- Servo system (IC100 series or IC300 series on SS-63 board) trouble

EQ:
- MPU control interface circuit (IC2102, 2107, 2108 on SS-63 board) trouble
- Interface buffers (IC901, 902, 905 on EQ-56 board) trouble
- EQ-56 board's MPU (IC908) trouble

DM:
- MPU control interface circuit (IC2102, 2107, 2108 on SS-63 board) trouble
- DM-89 board's MPU (IC906) trouble

TBC:
- MPU control interface circuit (IC2102, 2107, 2108 on SS-63 board) trouble
- TBC-23 board's MPU (IC202) trouble

Protecting operations: When the sub error message is "**SV**", enters the protection mode.
When it is except above, displays only this error.

Section 5
Periodic Maintenance and Inspection

This section explains about periodic maintenance and how to clean.

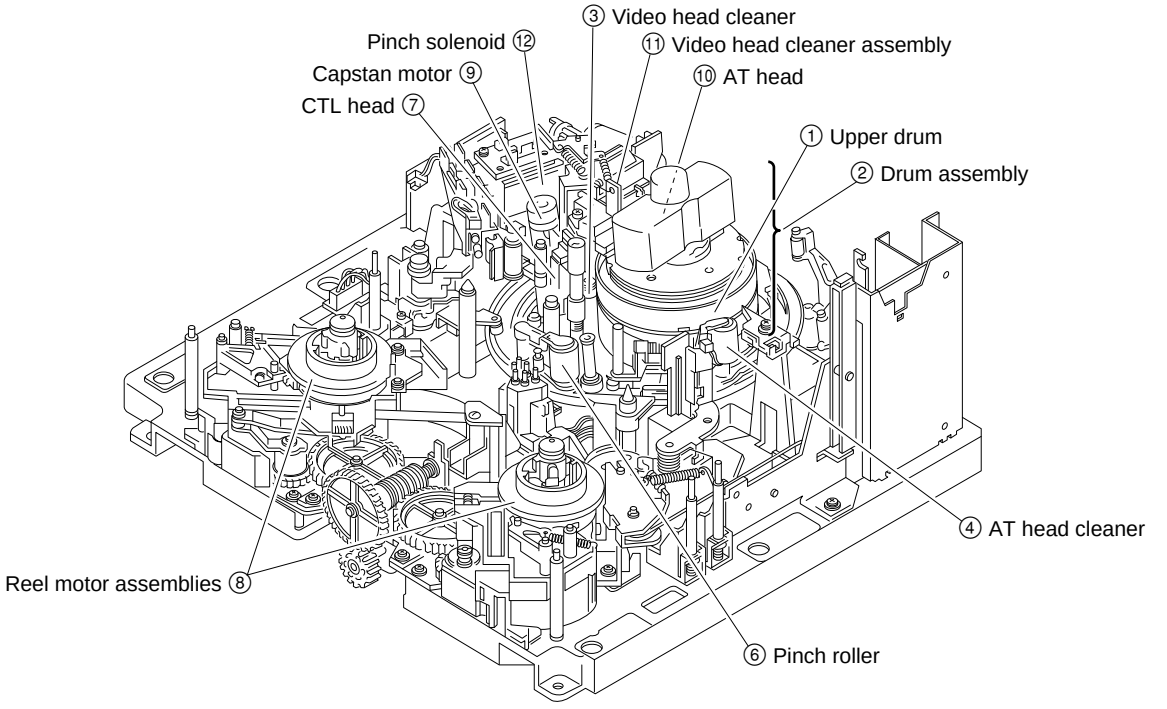
5-1. Periodic Maintenance

To make the most of the functions, fully realize the performances of this unit and to lengthen the life of the unit, periodic check and parts replacement are recommended.

5-1-1. Index

It is necessary to check and replace periodically to the following parts.
The numbers in the illustration correspond to the table in the next page.

< Mechanical Deck Block >



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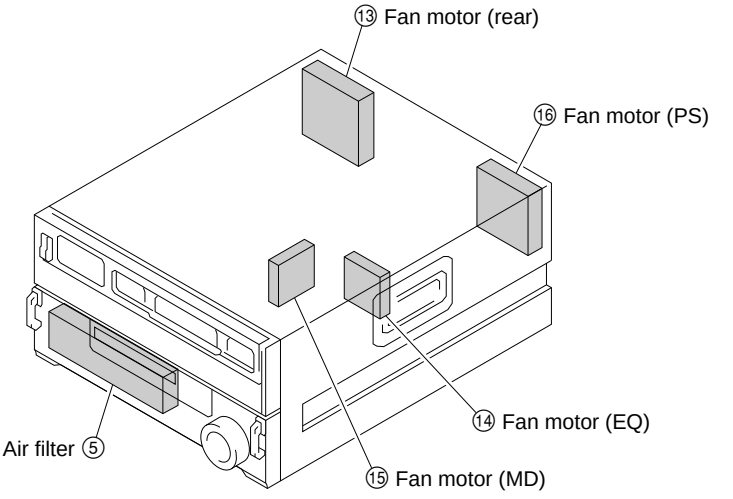


5-1-2. Periodic Replacement and Check Item Table

The replacement time shown in the following table is not the guarantee term of parts. The replacement time of parts varies depending on the operating environment and conditions of the unit.
Especially, the pinch roller, cleaners and air filter may be required replacing earlier than replacement period shown in table depending on their dirt or abrasion.

No.	Replacement parts	Replacement period	Part No.	Name	Q'ty	Note
1	Upper drum	Every 3,000 hours of drum rotating	A-8313-970-A	Upper drum DJR-17A-R	1	
2	Drum assembly *1	Every 6,000 hours of drum rotating	A-8313-969-A	Drum DJH-17A-R	1	
3	Video head cleaner	Every 2,000 hours of drum rotating	X-3167-281-3	Roller assy, V cleaning	1	Check every 1,000 hours
			3-182-765-02	CR spacer	1	
4	AT head cleaner	Every 2,000 hours of drum rotating	X-3167-053-2	Arm assy, CL	1	Check every 1,000 hours
5	Air filter	Every 6,000 hours of air filter use	3-603-810-01	Filter	1	
6	Pinch roller	Every 2,000 hours of tape running	X-3167-054-3	Arm assy, pinch	1	Check every 1,000 hours
7	CTL head	Every 4,000 hours of tape running	8-825-554-83	CTL head (PS244-21B)	1	
8	Reel motor	Every 4,000 hours of tape running	A-8267-774-C	RM assy	2	
9	Capstan motor	Every 6,000 hours of tape running	1-698-179-12	Motor, DC (capstan)	1	
10	AT head	Every 6,000 hours of tape running	8-825-779-02	Audio head (PS244-2103J)	1	Check every 3,000 hours
11	Video head cleaner assembly *2	Ealier time either 6,000 hours of drum rotating or 200,000 times of threading	A-8267-398-J	Video head cleaner assembly	1	
12	Pinch solenoid	Ealier time either 6,000 hours of tape running or 200,000 times of threading	1-454-338-00	Solenoid, plunger	1	
13	Fan motor (rear)	Every 40,000 hours of energizing	1-698-939-11	Fan, DC (92 square)	1	
14	Fan motor (EQ)	Every 40,000 hours of energizing	1-698-786-11	Fan, DC (60 square)	1	
15	Fan motor (MD)	Every 40,000 hours of energizing	1-698-857-11	Fan, DC (60 square)	1	
16	Fan motor (PS)	Every 40,000 hours of energizing	1-698-812-11	Fan, DC (80 square)	1	

*1 Drum assembly includes an upper drum and a brush slip ring.
*2 Video head cleaner assembly includes a video head cleaer.

Replace the parts shown in the table below periodically when the threading/un-threading operation is repeated frequently.

Replacement parts	Replacement period	Part No.	Name	Q'ty
Brake solenoid	Every 200,000 times of threading	1-454-417-31	Solenoid, Plunger	1
S tension regulator	Every 200,000 times of threading	A-8267-795-D	Tension regulator assy (RP)	1
T tension regulator	Every 200,000 times of threading	A-8267-423-B	T tension regulator assy	1
T drawing arm assembly	Every 200,000 times of threading	A-8278-313-A	Drawer assy (T)	1
Gear box assembly	Every 200,000 times of threading	A-8267-424-A	Box assembly, Gear	1
Threading ring assembly	Every 200,000 times of threading	A-8267-395-E	Ring assembly, Threading	1
Ring roller	Every 200,000 times of threading	3-180-677-01	Roller, Ring	2
		3-180-679-01	Roller (B), Ring	1
Pinch arm guard	Every 200,000 times of threading	3-180-853-01	Guard, Pinch arm	1
CL guide rail	Every 200,000 times of threading	3-180-874-02	Rail, CL guide	1
Cassette compartment assembly	Every 200,000 times of threading	A-8267-589-D	Cassette compartment (RP)	1
Video head cleaner	Every 1,000 hours of drum rotating	X-3167-281-3	Roller assy, V cleaning	1
		3-182-765-02	CR spacer	1
AT head cleaner	Every 1,000 hours of drum rotating	X-3167-053-2	Arm assy, CL	1
Pinch roller	Every 1,000 hours of drum rotating	X-3167-054-3	Arm assy, Pinch	1

5-1-3. Hours Meter

This unit can display an hours meter on the time data display area of the lower control panel. Perform a periodic check with this hours meter as a reference.

1. Contents of display

Menu No.	Display	Contents
H01	OPERATION HOURS	Sum of energized time
H02	DRUM RUNNING HOURS	Sum of drum rotating time
H03	TAPE RUNNING HOURS	Sum of tape running time
H04	THREADING COUNTER	Sum of threading
H12	DRUM RUNNING HOURS	Sum of drum rotating time (Resettable)
H13	TAPE RUNNING HOURS	Sum of tape running time (Resettable)
H14	THREADING COUNTER	Sum of threading (Resettable)
H15	AIRFILTER OPERATION HOURS	Sum of air filter use time (Resettable)

2. Display procedures

(1) Press the MENU button on the lower control panel.
(2) Put the "✻" to the desired ITEM by turning the SEARCH dial.
(3) Press the SET button on the lower control panel to display the hours meter.
(4) Press the MENU button once and repeat from step (2) to display other ITEM.
Press the MENU button twice to exit the MENU.

5-2. Cleaning

To make the most of the functions, fully realize the performance of this unit, and to lengthen the life of the unit and tape, clean the components often.

5-2-1. Cleaning by Cleaning Tape

If the video heads are clogged, clean the video head as the following procedure. Make sure to use the specified cleaning tape. If other tape is used, unusual abrasion or damage of the video heads may occur.

Specified cleaning tape: BCT-5CLN

Prodedure

1. Insert the cleaning tape BCT-5CLN to the unit.
2. Press the EJECT and PLAY buttons simultaneously.
   The cleaning tape is played back for approx. 5 seconds. After that, the cleaning tape will be ejected automatically.
   Notes
   - If the cleaning tape is not ejected after playing back more than 5 seconds, be sure to press the EJECT button immediately and eject the cleaning tape.
   - Do not be place the cleaning tape in the STOP mode, and do not put the unit in fast-forward and rewind modes, because the video heads may be damaged.
3. Confirm that the head clogging is clear.

If the video heads are still clogged after cleaning by cleaning tape, clean them by cleaning cloth. (Refer to Section 5-2-3.)

5-2-2. General Information for Cleaning by Cleaning Cloth

1. Cautions

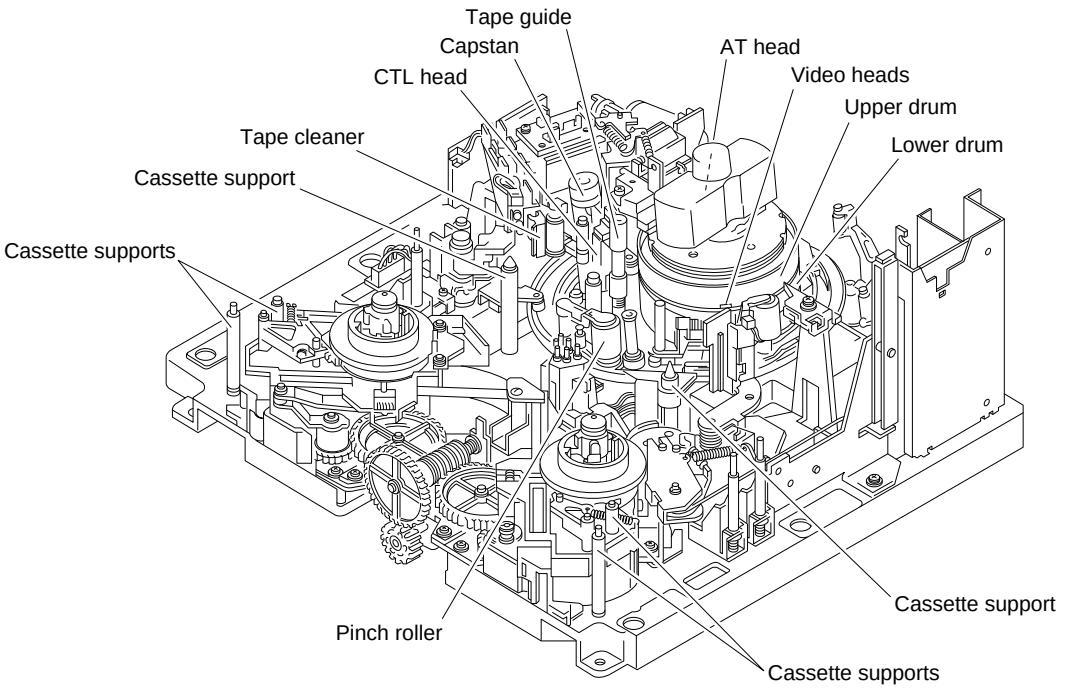
- Be sure turn the power off before cleaning.
- Each block in the mechanical deck consists of a precision part and is adjusted precisely. Be careful not to damage each part and to apply an excessive force during cleaning.
- Do not touch the greased portions during cleaning. If grease attaches to cleaning cloth, replace the cleaning cloth with a new one. If a cleaning cloth smeared with grease is used, grease may attach to the places where it should not.
- Do not insert a cassette tape before a cleaning fluid completely evaporates after cleaning.

2. Preparation

(1) Turn the power off.
(2) Remove the upper lid. (Refer to Section 2-3-1.)
(3) Remove the plate MD assembly. (Refer to Section 2-4.)
(4) Remove the cassette compartment. (Refer to Section 2-5.)

3. Index

< Mechanical Deck Block >



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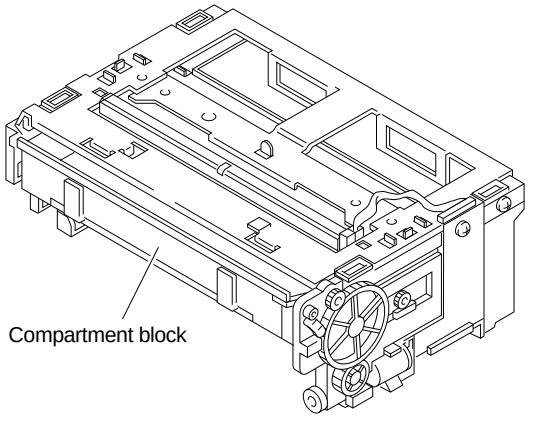

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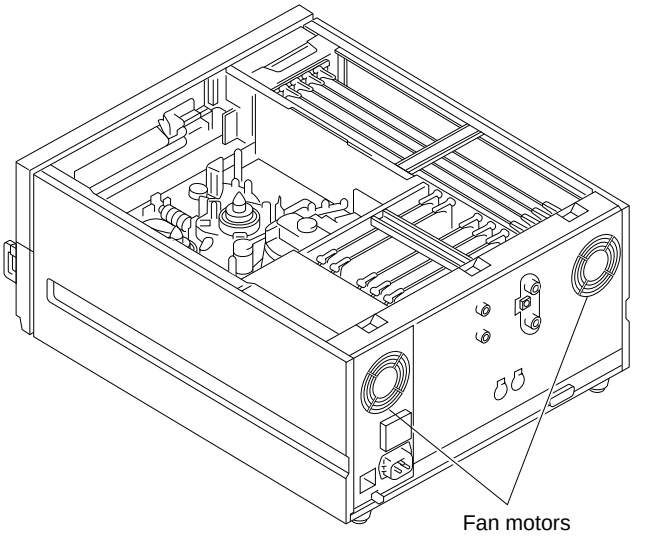


5-2-3. Tape Running Surface of Upper Drum and Video Heads Cleaning

Caution

Never touch the rotaing drum.
The rotary heads are the part that can be damaged easily. Be careful not to damage the rotary heads during cleaning.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Note

Do not use a cotton swab to clean the video heads.

Procedures

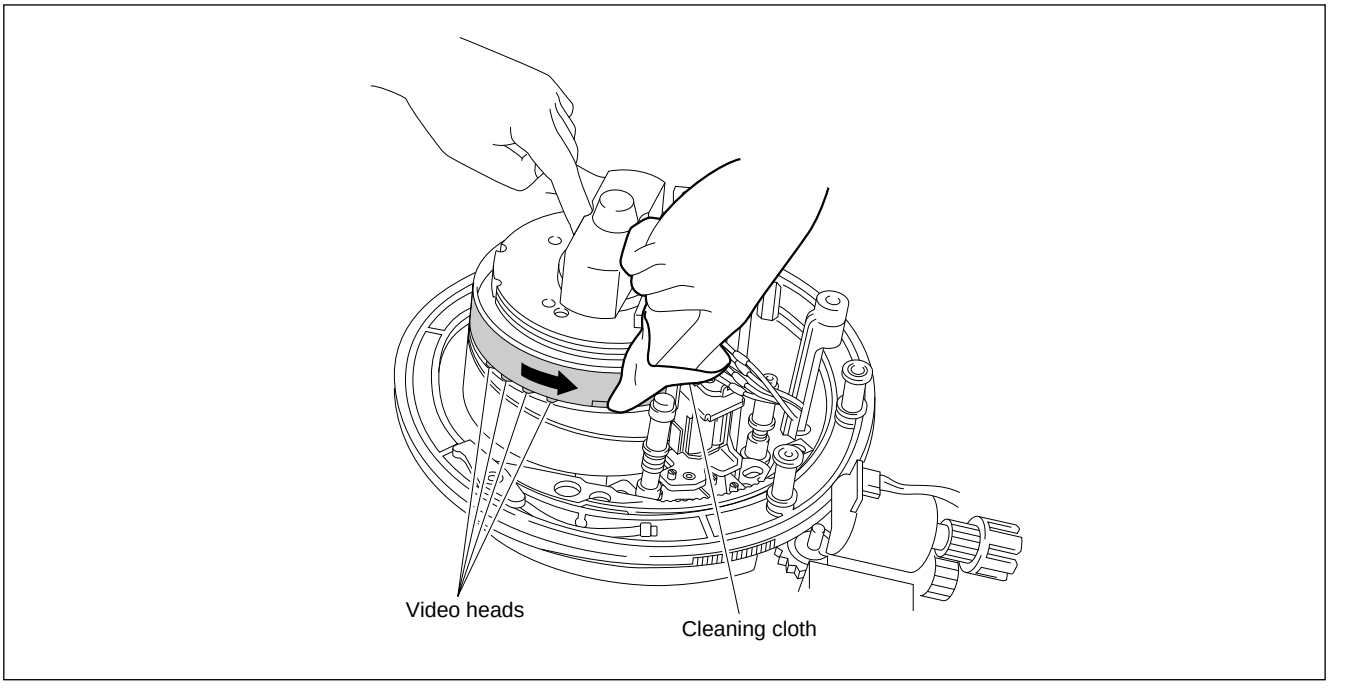
1. Hold the cleaning cloth moistened with a cleaning fluid keeping it without becoming wrinkled. And press the cleaning cloth slightly against the video heads.

2. Rotate the upper drum slowly counterclockwise two or three turns and clean the tape running surface and video heads with the cleaning cloth held.

   Note

   Be sure to rotate the upper drum counterclockwise and clean the video heads along the circumference. Do not rotate the upper drum in the opposite direction (clockwise) or clean it in the vertical direction. This may damage the rotary heads and the brush slip ring assembly.

3. After cleaning, wipe it with a dry cleaning cloth two or three times.



Video Heads Cleaning

http://getMANUAL.com

5-2-4. Tape Running Surface of Lower Drum and Lead Surface Cleaning

Caution

Be careful not to damage the lower drum (specially lead surface) during cleaning. Pay careful attention when cleaning the edge portion above the lower drum because it is located near the video heads.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01
- Skewer or an equivalent (Never use a metallic skewer.)

Procedures

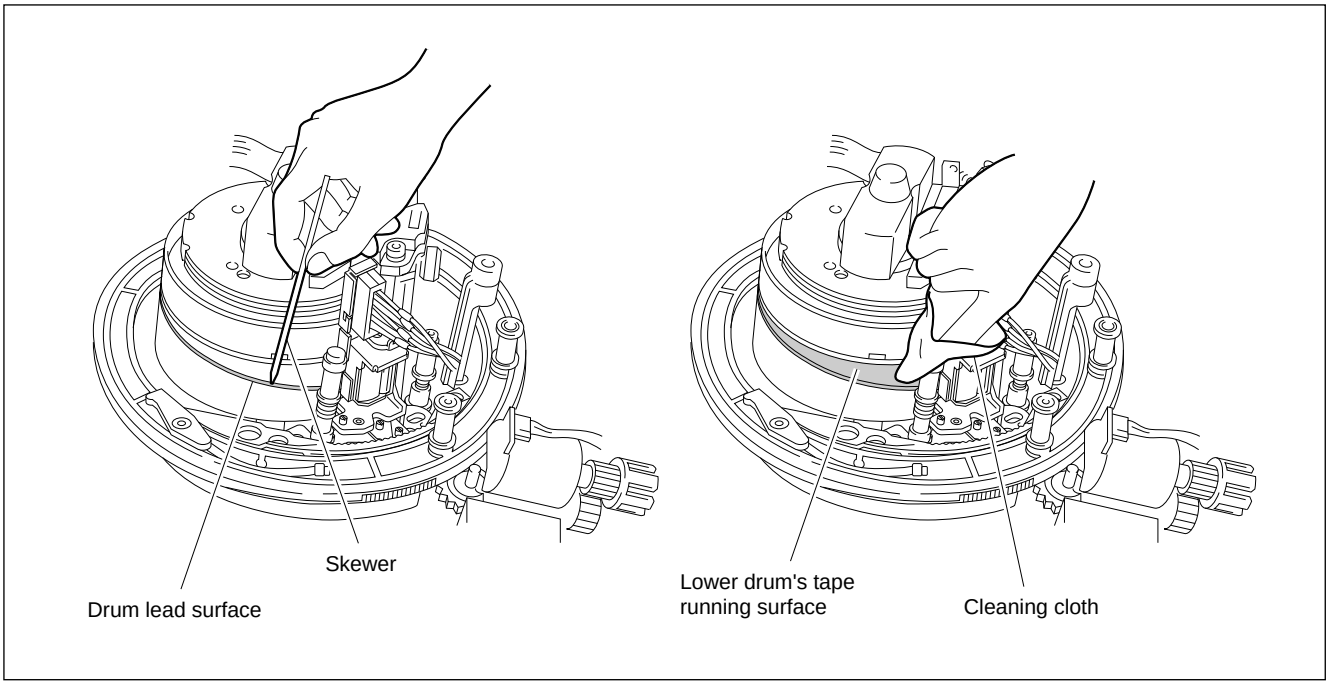
1. As shown in the figure, put a skewer (or an equivalent) along the drum lead surface and remove the magnetic powder.

   Notes

   1. Never use a metallic skewer instead of the skewer. This may damage the tape running surface.
   2. Tracking may be badly influenced when magnetic powder attaches to the drum lead surface. Remove the magnetic powder completely during cleaning.

2. Clean the drum lead surface and lower drum's tape running surface (shaded portion in the figure) with a cleaning cloth moistened with a cleaning fluid.

3. After cleaning, wipe it with a dry cleaning cloth two or three times.



Tape Running Surface of Lower Drum and Lead Surface Cleaning

5-2-5. Stationary Heads Cleaning

Caution

Be careful not to damage the head surface when cleaning the stationary heads.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

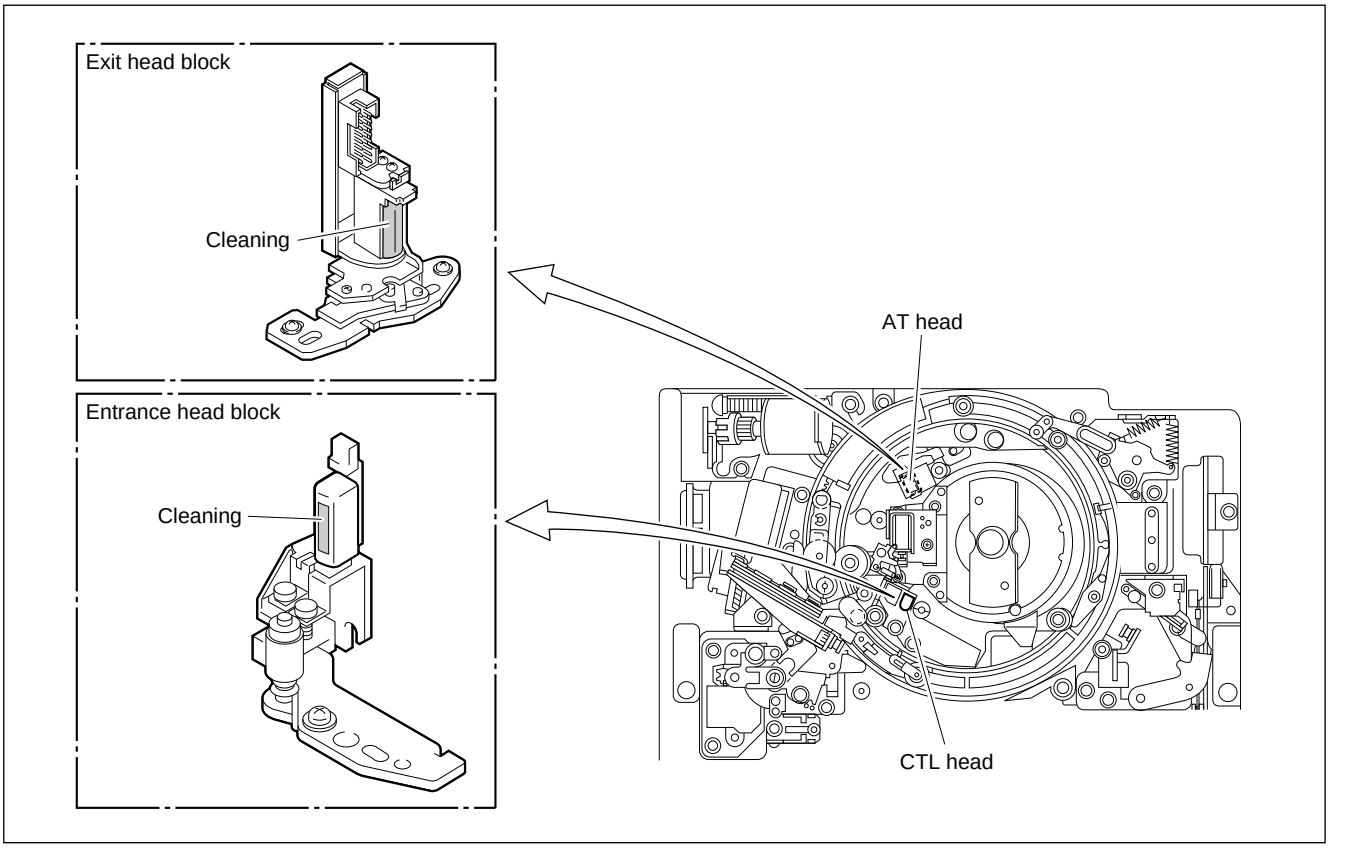
Procedures

1. Clean the tape running surfaces of the AT head and CTL head in the vertical direction with a cleaning cloth moistened with a cleaning fluid.

   Note

   An error may occur in the playback when magnetic powder attaches to the head gap portion of the AT head and CTL head.
   Remove the magnetic powder completely during cleaning.

2. After cleaning, wipe it with a dry cleaning cloth two or three times.



Stationary Heads Cleaning

5-2-6. Tape Running System and Tape Cleaner Cleaning

Warning

The tape cleaner has a sharp edge. Do not touch the edge with bare hands. Pay careful attention when cleaning the tape cleaner.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Procedures

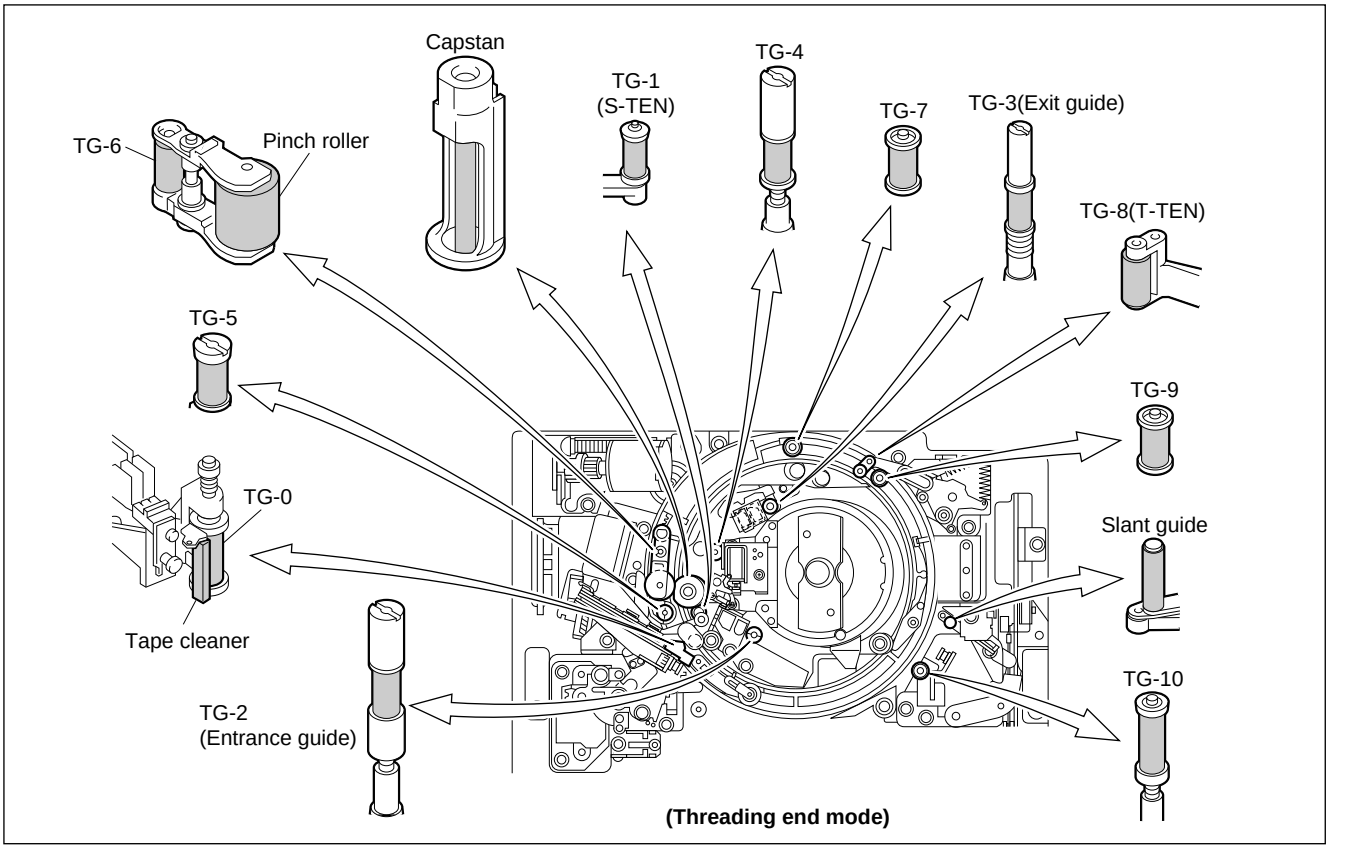
1. Wipe the surface of the tape cleaner using a paper (such as a sheet of paper of this manual) to chip the magnetic powder adhered on the tape cleaner.

   WARNING

   Do not touch the edge portion of the tape cleaner with bare hands.
   Pay careful not to damage the tape cleaner.

2. Clean the tape running surfaces (shaded portions in the figure) of each guide and the tape cleaner with cleaning cloth moistened with a cleaning fluid.

3. After cleaning, clean them with a dry cleaning cloth two or three times.



Tape Running System and Tape Cleaner Cleaning

5-2-7. Fan Motors Cleaning

Notice

The temperature in the unit increases when dust attaches to the fan motor and when the air flow is disturbed. This may badly influence the performance and life of the unit. Clean the fan motor on the rear panel periodically because it accumulates dust easily.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01
- Vacuum cleaner

Procedures

1. Remove the power panel. (Refer to Section 2-3-4.)
   Disconnection of harness is not necessary.

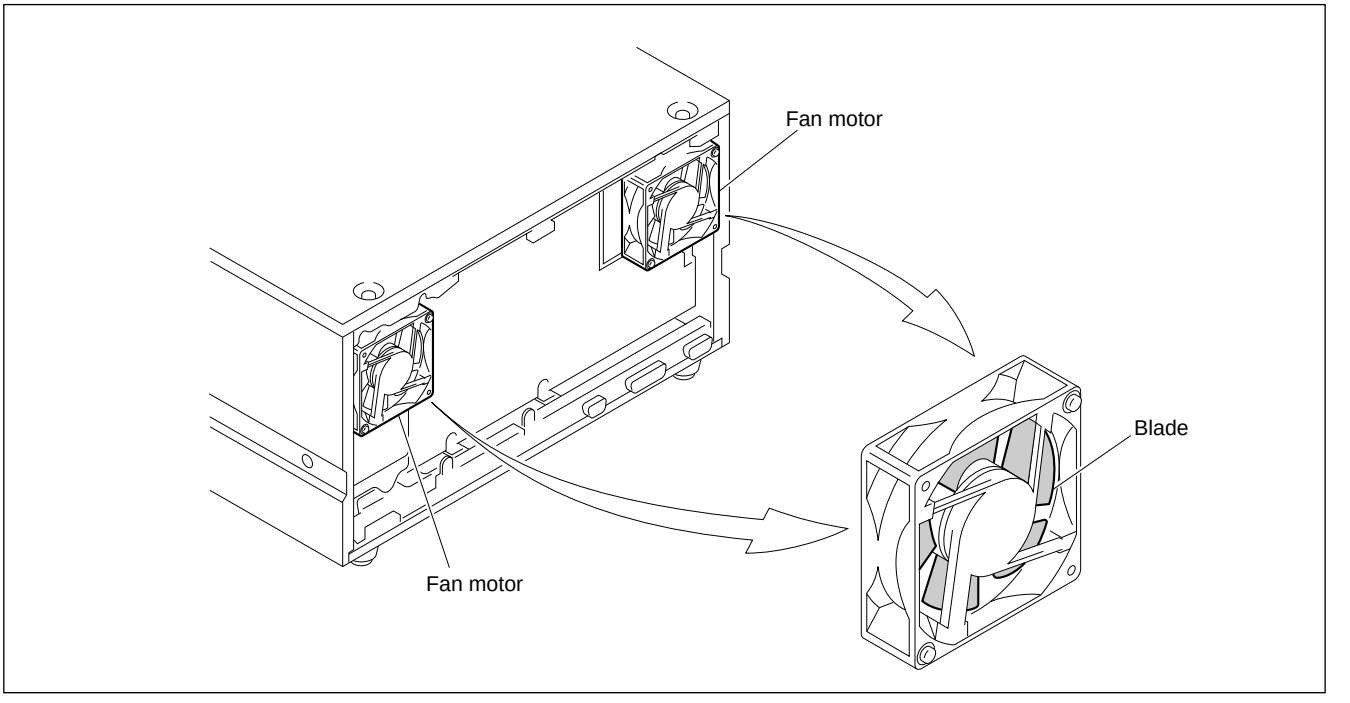
2. Remove the connector panel. (Refer to Section 2-3-3.)
   Disconnection of harness is not necessary.

3. Remove the dust on the fan motors using a vacuum cleaner.

4. Clean the blades (shaded portion in the figure) with cleaning cloth moistened with a cleaning fluid.

5. Install the connector panel. (Refer to Section 2-3-3.)

6. Install the power panel. (Refer to Section 2-3-4.)



Fan Motor Cleaning

5-2-8. Cassette Compartment and Cassette Supports Cleaning

Notes

- Be careful not to apply an excessive force to the compartment or mirror when cleaning the cassette compartment.
- Do not clean the door and mirror with alcohol. This may cause a crack.

Tools

- Cloth (or Gauze)
- Vacuum cleaner

Procedures

1. Remove the cassette compartment from the unit. (Refer to Section 2-5.)

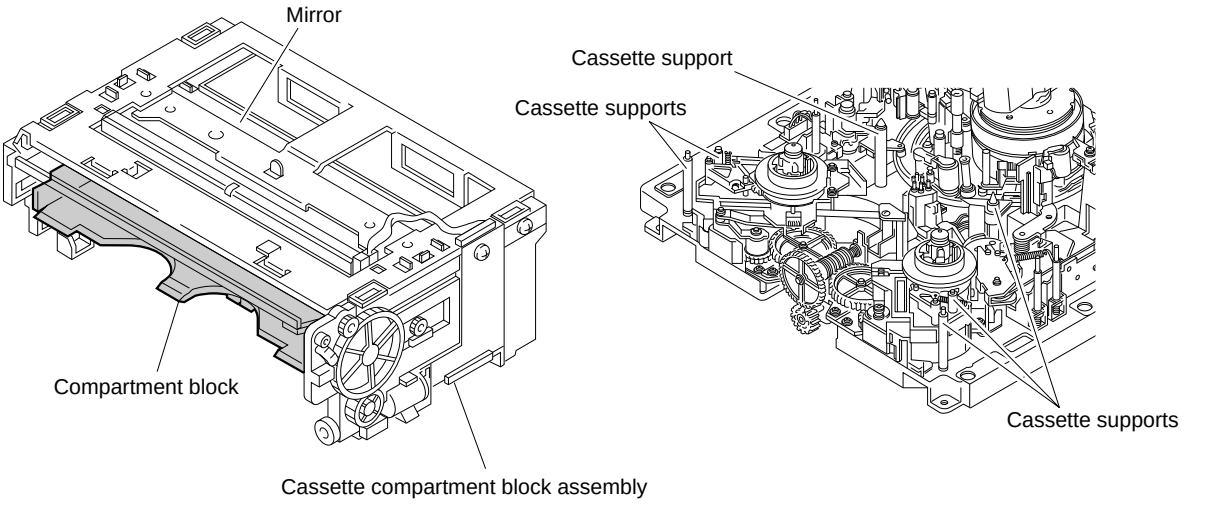
2. Remove the dust on the cassette compartment from the cassette insertion inlet using a vacuum cleaner.

3. Clean the compartment (shaded portion in the figure) with a dry cloth (or gauze).

   Note

   Do not apply an excessive force to the compartment block.

4. Clean the cassette supports on the mechanical deck with dry cloth (or gauze).



Cassette Compartment Cleaning

Section 6
Replacement of Plug-in Boards

6-1. Service Overview for Plug-in Board Replacement

6-1-1. Notes on Plug-in Board Replacement

- For the board replacements except plug-in boards, refer to the maintenance manual part 2, volume-1.
- The plug-in board to be installed needs the state with completing the factory adjustment or equivalent. If not, perform the electrical adjustments and confirmations in according with instructions in the maintenance manual part 2, volume-1.
- Never touch (move) the adjustment parts that are not described in Section 6. If move these, requires to perform the electrical adjustments that are described in the maintenance manual part 2, volume-1.
- Do not execute (change) the adjustment items (data) in the maintenance mode that are not described in Section 6. If the adjustment item (data) has been executed (changed) carelessly, do not save the data and turn off the power of the DNW or execute “ALL DATA PREVIOUS” in each NV-RAM control menu. (Never execute “SAVE ALL ADJUST DATA” of each NV-RAM control menu.)
- It is recommended to record the states before replacement on a copy of setting check sheet in Appendix B. In case of the change of setting in the adjustments and so on, this recorded setting check sheet is the convenient when resetting the setting after the replacement.
- The SS-63 board of the board numbers 1-661-127-11 and 1-661-127-12 can not be used to the DNW-A22/A22P.
- The DM-89 board of the service parts code suffix-A cannot be used to the DNW-A22/A22P.
- The TBC-23 board of the service parts code suffix-A cannot be used to the DNW-A22/A22P. And the board numbers 1-648-543-13 and 1-648-543-14 among the TBC-23 board of the service parts code suffix-B cannot be used to the DNW-A22/A22P in without completing the specified modification to them. Please consult with local Sony’s sales/service office in detail.
- Check that the state of 525/625 line system is following state before starting the electrical adjustment.
  For DNW-A22: 525/60 line system
  For DNW-A22P: 625/50 line system
  If not, switch the line system by the setup menu ITEM-013 : 525/625 SYSTEM SELECT in according with Section 7-2-2 in the operation manual.

6-1-2. Service Action before/after Plug-in Board Replacement

List up the service action (except function check) after replacing each plug-in board.
Refer to “6-1-3. Pulling out /Insertion of Plug-in Board” for pulling out and insertion of board when Referring section Column of below table is shown “–”.

Board name	Referring section	Service action
APR-12	Section 6-2	Electrical adjustments and Shorting plugs setting
DM-89	Section 6-3	Electrical adjustments
DPR-71	–	None
DPR-73	–	None
EQ-56	Section 6-4	Electrical adjustments
SS-63	Section 6-5	DIP switches setting, Setup menu resetting, Error logging data clear, and Calendar/Clock setting
TBC-23	Section 6-6	Electrical adjustments and DIP switches setting
TBC-24	Section 6-7	Electrical adjustments
VPR-17	Section 6-8	Electrical adjustments

For the setting of switches and shorting plugs, and the resetting the setup menu (Main and Extended menus), need to record the setting states of before replacement.

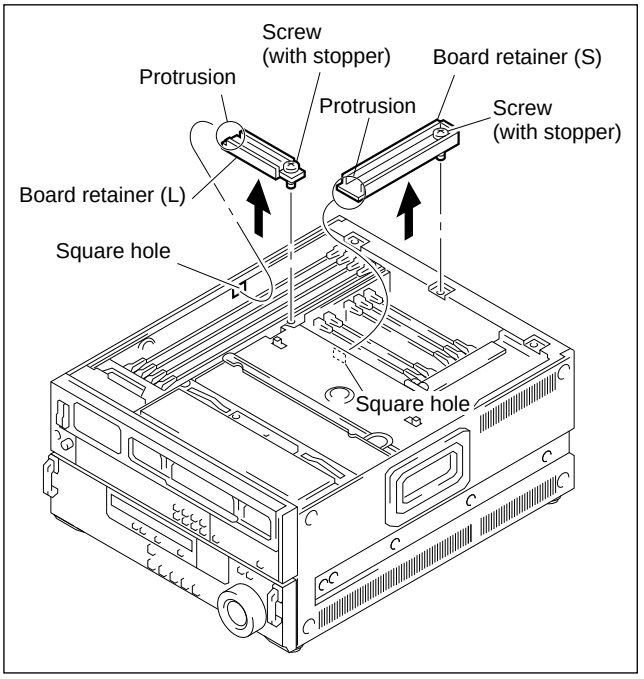
6-1-3. Plug-in Board Pulling out/Insertion

Note

Turn off the power of DNW and then wait 30 seconds before starting the service operation.

Pulling out

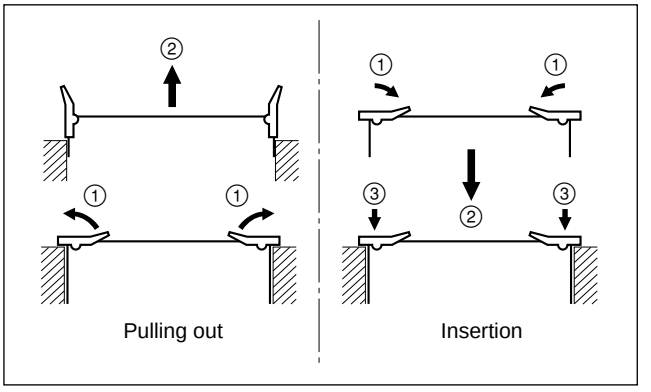
(1) Remove the upper lid. (Refer to "2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation".)
(2) Loosen a screw, and remove the board retainer (L) or (S).



(3) When pulling out the TBC-23 or TBC-24 board, disconnect the connected harness from its board.

TBC-23 board: CN1
TBC-24 board: CN1

(4) Pull up the eject levers on the board to the direction of the arrows. (Disconnect it from the motherboard.)
(5) Hold the eject levers and pull out slowly the board.



(6) When removing the APR-12 or EQ-56 board, disconnect the connected harnesses from its board .

APR-12 board:	CN500 (A-1)	3P Red
	CN600 (G-1)	3P Yellow
EQ-56 board:	CN100 (B-7)	6P White
	CN500 (A-4)	4P White
	CN1500 (A-5)	4P Black

Insertion

Perform in the reverse procedures of pulling out.

Notes

- After board insertion, press the two eject levers simultaneously and connect the firmly to the connector on the motherboard (MB-648 board).
- To install the board retainer, tighten the screw after inserting the protrusion of the board retainer into the square hole of chassis.

6-1-4. Equipment List

Shows the lists of the measuring equipment, and tools to be appeared in Section 6.
Right column is the board name that using equipment.

List for DNW-A22

Composite waveform/vector monitor	TEKTRONIX 1750 or 1780R or equivalent		DM-89, VPR-17
	TEKTRONIX 1780R or equivalent (With LINE SELECT)		TBC-23/24
Oscilloscope	TEKTRONIX 2465B or equivalent		APR-12, DM-89, EQ-56, VPR-17, TBC-24
Spectrum analyzer	ADVANTEST R3261A or equivalent		DM-89
Network analyzer	ANRITSU MS420B or equivalent		DM-89
Audio analyzer	TEKTRONIX AA501A-option 02 or equivalent		APR-12
Audio level meter	HEWLETT-PACKARD HP3400A or equivalent		APR-12
Frequency counter	ADVANTEST TR5821AK or equivalent		VPR-17
Digital voltage meter	ADVANTEST TR6845 or equivalent		DM-89
Extension boards	EX-377	(SONY part No. J-6269-810-A)	DM-89, EQ-56, TBC-23
	EX-555	(SONY part No. A-8277-211-A)	VPR-17
	EX-556	(SONY part No. A-8277-212-A)	APR-12
Extension harness	14P	(SONY part No. 1-952-684-11)	TBC-24
Composite video monitor	For 525/60 (NTSC) system		APR-12, DM-89, EQ-56, TBC-23/24, VPR-17
	For 625/50 (PAL) system		VPR-17 (Note
Terminators	75 Ω, BNC		DM-89, TBC-23/24, VPR-17
BNC T adapter	75 Ω		VPR-17
Cleaning tape	BCT-5CLN	(SONY standard products)	DM-89, TBC-23/24
Alignment tapes	CR5-1B	(SONY part No. 8-960-096-41)	DM-89, EQ-56, TBC-23/24
	CR5-2A	(SONY part No. 8-960-097-44)	DM-89, EQ-56, TBC-23/24
	CR8-1A	(SONY part No. 8-960-097-45)	APR-12
	SR5-1	(SONY part No. 8-960-075-01)	EQ-56, VPR-17

Note

If the DNW-A22 is operated on the 625/50 line system, the adjustments for the 625/50 line system are required at the electrical adjustments after the VPR-17 board replacement. In this time, the composite video monitor for 625/50 line system is required to display the maintenance mode screen.

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List for DNW-A22P

Composite waveform/vector monitor	TEKTRONIX 1751 or 1781R or equivalent	DM-89, VPR-17
	TEKTRONIX 1781R or equivalent (With LINE SELECT)	TBC-23/24
Oscilloscope	TEKTRONIX 2465B or equivalent	APR-12, DM-89, EQ-56, VPR-17, TBC-24
Spectrum analyzer	ADVANTEST R3261A or equivalent	DM-89
Network analyzer	ANRITSU MS420B or equivalent	DM-89
Audio analyzer	TEKTRONIX AA501A-option 02 or equivalent	APR-12
Audio level meter	HEWLETT-PACKARD HP3400A or equivalent	APR-12
Frequency counter	ADVANTEST TR5821AK or equivalent	VPR-17
Digital voltage meter	ADVANTEST TR6845 or equivalent	DM-89
VISC phase adjustment tool	(SONY part No. J-6332-240-A)	TBC-23
Extension boards	EX-377 (SONY part No. J-6269-810-A)	DM-89, EQ-56, TBC-23
	EX-555 (SONY part No. A-8277-211-A)	VPR-17
	EX-556 (SONY part No. A-8277-212-A)	APR-12
Extension harness	14P (SONY part No. 1-952-684-11)	TBC-24
Composite video monitor	For 625/50 (PAL) system	APR-12, DM-89, EQ-56, TBC-23/24, VPR-17
	For 525/60 (NTSC) system	VPR-17 (Note
Terminators	75 Ω, BNC	DM-89, TBC-23/24, VPR-17
BNC T adapter	75 Ω	VPR-17
Cleaning tape	BCT-5CLN (SONY standard products)	DM-89, TBC-23/24
Alignment tapes	CR5-1B PS (SONY part No. 8-960-096-91)	DM-89, EQ-56, TBC-23/24
	CR5-2A PS (SONY part No. 8-960-098-44)	DM-89, EQ-56, TBC-23/24
	CR8-1A PS (SONY part No. 8-960-098-45)	APR-12
	CR8-1B PS (SONY part No. 8-960-096-86)	APR-12
	SR5-1P (SONY part No. 8-960-075-51)	EQ-56, VPR-17

Note

If the DNW-A22P is operated on the 525/60 line system, the adjustments for the 525/60 line system are required at the electrical adjustments after the VPR-17 board replacement. In this time, the composite video monitor for 525/60 line system is required to display the maintenance mode screen.

6-1-5. Content of Alignment Tapes

Describes the contents of alignment tapes to be appeared in Section 6.

CR5-1B (SONY part No. 8-960-096-41): For DNW-A22 only
CR5-1B PS (SONY part No. 8-960-096-91): For DNW-A22P only

Time (min. : sec.)	Video	AFM*	LAU tracks	CTL track
0:00 -	RF sweep	No signal	No signal	CTL
2:00 -	60% H sweep (CTDM)	No signal	No signal	CTL
5:00 -	Pulse & Bar (CTDM)	No signal	No signal	CTL
8:00 -	60% multi-burst	No signal	No signal	CTL
11:00 -	Pulse & Bar	No signal	No signal	CTL
14:00 -	CR5-1B: 75% color-bar CR5-1B PS: 100% color-bar	400 kHz sine wave with 25 kHz deviation	No signal	CTL
16:30 -	CR5-1B: 75% color-bar CR5-1B PS: 100% color-bar	400 kHz sine wave with 75 kHz deviation	No signal	CTL
17:00 -	CR5-1B: 50% bowtie & 12.5T CR5-1B PS: 50% bowtie & 10T	No signal	No signal	CTL
19:00 -	Line 17	No signal	No signal	CTL
22:00 -	Quad phase	No signal	No signal	CTL
24:00 -	Flat filed	No signal	No signal	CTL
26:00 -	CR5-1B: 75% color-bar with Drop-out CR5-1B PS: 100% color-bar with Drop-out	No signal	No signal	CTL
28:00 - 30:00	Composite V sweep with VISC	No signal	No signal	CTL

*: DNW can not playback AFM part.

CR5-2A (SONY part No. 8-960-097-44): For DNW-A22 only
CR5-2A PS (SONY part No. 8-960-098-44): For DNW-A22P only

Time (min. : sec.)	Video	LAU tracks	CTL track
0:00 -	CR5-2A: 75% color-bar CR5-2A PS: 100% color-bar	No signal	No signal
3:00 -	60% multi-burst	No signal	No signal
6:00 -	CR5-2A: 50% bowtie & 12.5T CR5-2A PS: 50% bowtie & 10T	No signal	No signal
9:00 -	Pulse & Bar	No signal	No signal
11:00 -	Quad phase	No signal	No signal
13:00 - 15:00	Composite monoscope (Switching position is shifted.)	No signal	No signal

CR8-1A (SONY part No. 8-960-097-45): For DNW-A22 only
CR8-1A PS (SONY part No. 8-960-098-45): For DNW-A22P only

Time (min. : sec.)	LAU tracks	CTL track	Video
0:00 -	1 kHz sine wave, 0 VU	CTL	No signal
2:55 -	No signal	CTL	No signal
3:00 -	10 kHz sine wave, −10 VU	CTL	No signal
4:55 -	No signal	CTL	No signal
5:00 -	1 kHz sine wave, −20 VU	CTL	No signal
5:55 -	No signal	CTL	No signal
6:00 -	40 Hz sine wave, −20 VU	CTL	No signal
6:25 -	No signal	CTL	No signal
6:30 -	7 kHz sine wave, −20 VU	CTL	No signal
6:55 -	No signal	CTL	No signal
7:00 -	10 kHz sine wave, −20 VU	CTL	No signal
7:25 -	No signal	CTL	No signal
7:30 -	15 kHz sine wave, −20 VU	CTL	No signal
7:55 -	No signal	CTL	No signal
8:00 - 10:00	1 kHz sine wave, 0 VU	1 kHz sine wave, 0VU	No signal

CR8-1B PS (SONY part No. 8-960-096-86): For DNW-A22P only

Time (min. : sec.)	LAU tracks	CTL track	Video	AFM
0:00 -	1 kHz sine wave, 0 VU	CTL	Black burst	No signal
2:55 -	No signal	CTL	Black burst	No signal
3:00 -	15 kHz sine wave, 0 VU	CTL	Black burst	No signal
4:55 -	No signal	CTL	Black burst	No signal
5:00 -	1 kHz sine wave, −20 VU	CTL	Black burst	No signal
5:55 -	No signal	CTL	Black burst	No signal
6:00 -	40 Hz sine wave, −20 VU	CTL	Black burst	No signal
6:25 -	No signal	CTL	Black burst	No signal
6:30 -	7 kHz sine wave, −20 VU	CTL	Black burst	No signal
6:55 -	No signal	CTL	Black burst	No signal
7:00 -	10 kHz sine wave, −20 VU	CTL	Black burst	No signal
7:25 -	No signal	CTL	Black burst	No signal
7:30 -	15 kHz sine wave, −20 VU	CTL	Black burst	No signal
7:55 -	No signal	CTL	Black burst	No signal
8:00 - 10:00	1 kHz sine wave, 0 VU	1 kHz sine wave	No signal	No signal

SR5-1 (SONY part No. 8-960-075-01): For DNW-A22
SR5-1P (SONY part No. 8-960-075-51): For DNW-A22P

Time (min. : sec.)	Digital video	Digital audio	CTL track
0:00 -	100% color-bar	1 kHz sine wave, –20 dB FS	CTL
2:00 -	100% color-bar	1 kHz sine wave, 0 dB FS	CTL
4:00 -	100% color-bar	–∞ dB FS	CTL
6:00 -	100% color-bar	20 Hz sine wave, –20 dB FS	CTL
8:00 -	100% color-bar	20 kHz sine wave, –20 dB FS	CTL
10:00 -	Ramp	1 kHz sine wave, –20 dB FS	CTL
12:00 -	Ramp	1 kHz sine wave, 0 dB FS	CTL
14:00 -	Ramp	–∞ dB FS	CTL
16:00 -	Ramp	20 Hz sine wave, –20 dB FS	CTL
18:00 -	Ramp	20 kHz sine wave, –20 dB FS	CTL
20:00 -	100% color-bar	1 kHz sine wave, –20 dB FS	CTL
22:00 -	100% color-bar	1 kHz sine wave, 0 dB FS	CTL
24:00 -	100% color-bar	–∞ dB FS	CTL
26:00 -	100% color-bar	20 Hz sine wave, –20 dB FS	CTL
28:00 - 30:00	100% color-bar	20 kHz sine wave, –20 dB FS	CTL

6-2. APR-12 Board Replacement

The electrical adjustments are essential after the APR-12 board for DNW-A22/A22P is replaced.
To perform the electrical adjustments, the following equipment and fixtures are required.

- Audio analyzer: TEKTRONIX AA501A-option 02 or equivalent

  Note

  Always, the audio analyzer should be filtered through 80 kHz LPF.
- Audio level meter: HEWLETT-PACKARD HP3400A or equivalent
- Oscilloscope: TEKTRONIX 2465B or equivalent
- Extension board: EX-556 (SONY part No. A-8277-212A)
- Alignment tape(s)
  For DNW-A22: CR8-1A (SONY part No. 8-960-097-45)
  For DNW-A22P: CR8-1A PS (SONY part No. 8-960-098-45) and
  CR8-1B PS (SONY part No. 8-960-096-86)

6-2-1. Replacement Procedure

Note

Turn off the POWER switch before starting the replacement.

(1) Remove the upper lid, board retainer (S), and APR-12 (original) board.
(Refer to “6-1-3. Plug-in Board Pulling out/Insertion”.)
(2) Disconnect the two harnesses from CN500 and CN600 on the APR-12 (original) board.
(3) After inserting the extension board EX-556 to the slot for APR-12 board, and then connect a new APR-12 board to the extension board.
(4) Connect the two disconnected harnesses to CN500(red) and CN600(yellow) on the APR-12 (new) board.
(5) Clean the AT head. (Refer to “5-2-5. Stationary Heads Cleaning”.)
(6) Perform the electrical adjustments (Section 6-2-3).
(7) For DNW-A22P only
Return the ITEM-F01: AUDIO NR IN SP MODE of setup extend menu to “ON”.
(8) Return the states of S1100-1 on the SS-63 board, control panels, and connector panel to their original states.
(9) Turn off the power, and wait for 30 seconds.
(10) Remove the adjusted APR-12 board from the extension board, then pull out the extension board.

Note

It is not necessary to disconnect the harnesses that are connected to the adjusted APR-12 board.

(11) Set the short plugs on the adjusted APR-12 board to the same settings as the original board.
(For shorting plugs, refer to Section 1-10-1.)
(12) Install the board retainer (S) and upper lid after inserting the adjusted APR-12 board.
(Refer to “6-1-3. Plug-in Board Pulling out/Insertion”.)

6-2-2. Electrical Adjustments

Adjustment Items

No.	Item		Adjustment point	Notes
0	Preparation			
1	Offset level adjustment	CH1	⊘RV103/APR-12(D-2)	TP700/APR-12(G-3)
		CH2	⊘RV203/APR-12(G-2)	TP700/APR-12(G-3)
2	LAU PB frequency response adjustment (OXIDE) (Audio head dumping adjustment)	CH1	⊘RV501/APR-12(A-1) ⊘RV500/APR-12(A-1) [S500/APR-12(A-1)]	AUDIO OUTPUT CH1
		CH2	⊘RV601/APR-12(G-1) ⊘RV600/APR-12(G-1) [S600/APR-12(G-1)]	AUDIO OUTPUT CH2
3	LAU PB frequency response adjustment	CH1	⊘RV502/APR-12(A-1)	AUDIO OUTPUT CH
	(METAL) (DNW-A22P only)	CH2	⊘RV602/APR-12(G-1)	AUDIO OUTPUT CH2
4	LAU Dolby level adjustment	CH1	⊘RV503/APR-12(C-1)	TP501/APR-12(C-1)
		CH2	⊘RV604/APR-12(E-1)	TP601/APR-12(E-1)
5	LAU PB level adjustment	CH1	⊘RV504/APR-12(B-1)	AUDIO OUTPUT CH1
		CH2	⊘RV605/APR-12(F-1)	AUDIO OUTPUT CH2
6	LAU PB phase adjustment		⊘RV603/APR-12(F-1)	AUDIO OUTPUT CH1/CH2

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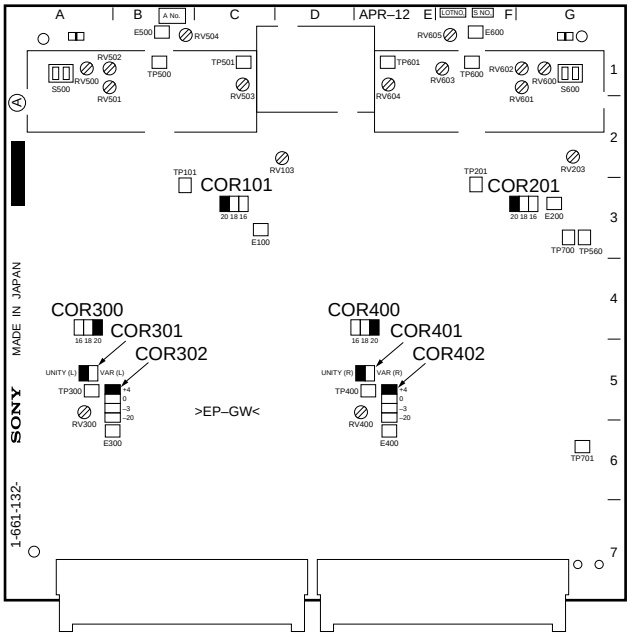
0. Preparation

Setting(Check) of the short plugs on the APR-12 board

Set the position of short plugs as follows:

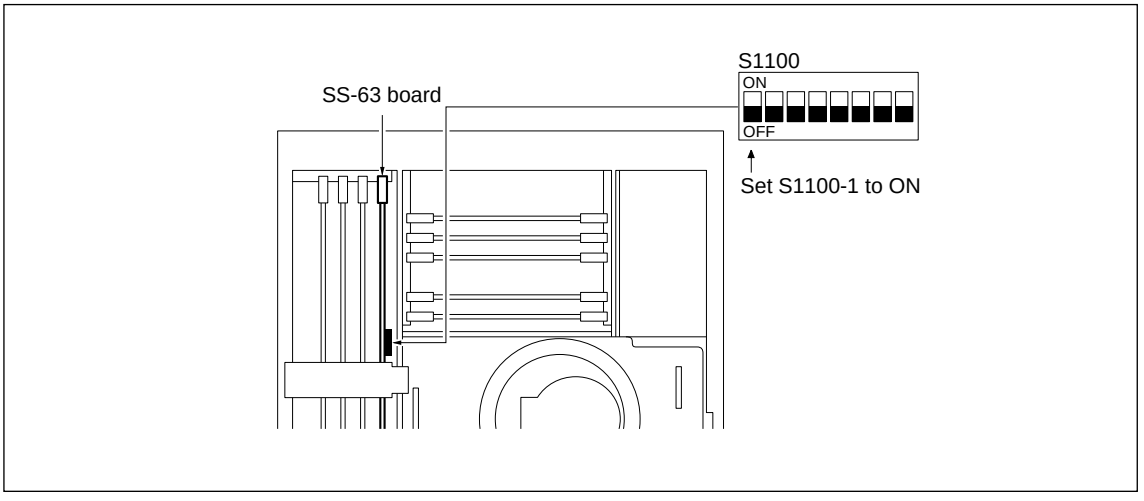
Ref. No.	Item	Position
COR101	Analog audio CH1 input headroom	20
COR201	Analog audio CH2 input headroom	20
COR300	Monitor L output headroom	20
COR301	Monitor L output level, fixed or variable	UNITY(L)
COR302	Monitor L output level	+4
COR400	Monitor R output headroom	20
COR401	Monitor R output level, fixed or variable	UNITY(R)
COR402	Monitor R output level	+4



APR-12 Board (A Side)

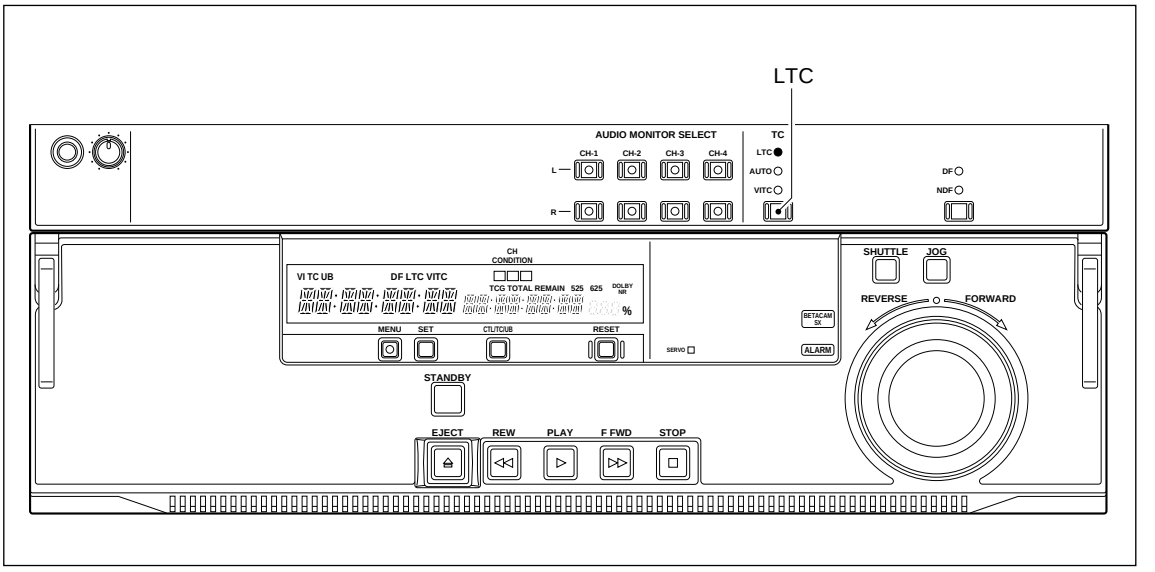
Setting of the DNW

(1) Set S1100-1 on SS-63 board to ON to treat the extended menu of the setup menu.

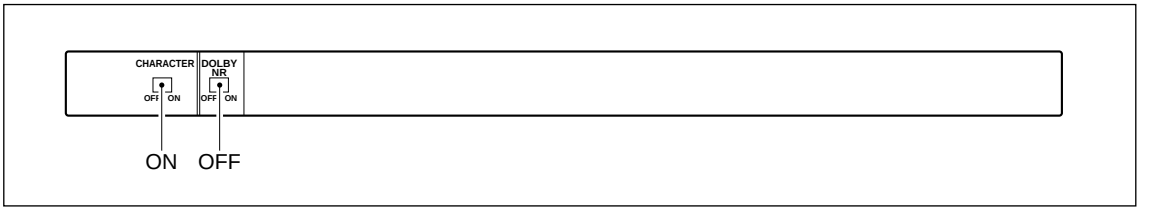


S1100 on SS-63 Board

(2) Turn on the power, and set each control panel and connector panel as shown below.



Upper/Lower Control Panels



Sub Control Panel

Setting of the setup extend menu

- For the DNW-A22
  None.
- For the DNW-A22P
  Set the ITEM-F01: AUDIO NR IN SP MODE to “SW”.

Notes

- To display the ITEM-F00 series, turn the search dial while pressing the PLAY button.
- After adjustments are completed, return the ITEM-F01 to “ON”.

1. Offset Level Adjustment

Measuring equipment: Oscilloscope

Note

More than 20 minutes should elapse after turning the power on, when this adjustment is performed.

(1) When the cassette tape is inserted, eject it.
(2) Connect and set the oscilloscope as follows:
CH-1: TP700/APR-12(G-3), DC 5 V/DIV, 2 µs/DIV
CH-2: TP701/APR-12(G-6), DC 5 V/DIV
Trigger: CH-2, – slope
(3) Adjust ⊘RV103/APR-12(D-2) so that the audio CH1 part of the waveform at TP700 makes the same waveform to the Figure 1 (left side).
(4) Adjust ⊘RV203/APR-12(G-2) so that the audio CH2 part of the waveform at TP700 makes the same waveform to the Figure 1 (right side).

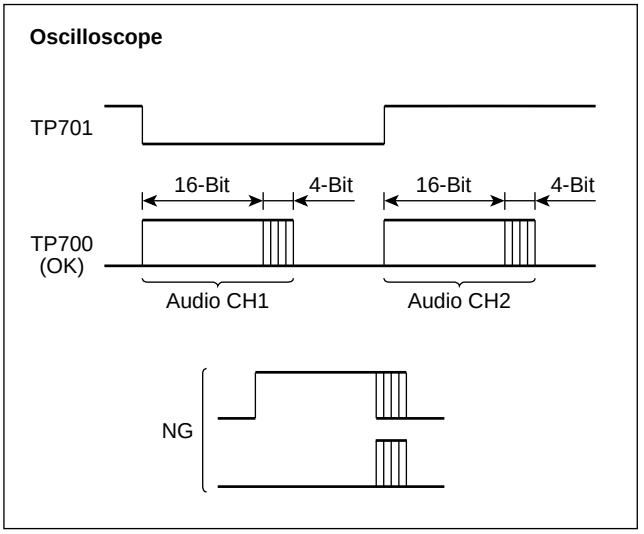
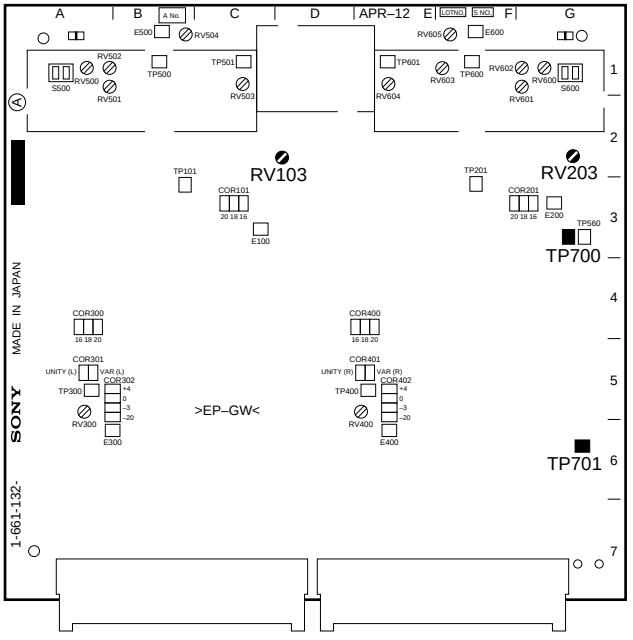


Figure 1. Waveform of CH1/CH2 Offset Level Adjustment



APR-12 Board (A Side)

2. LAU PB Frequency Response Adjustment (OXIDE)

Measuring equipment: Audio analyzer

CH1 adjustment

(1) Connect the input of audio analyzer to AUDIO OUTPUT CH1 connector.
(2) Playback the following specified portions (−20 VU) of the alignment tape CR8-1A or CR8-1A PS, and perform the adjustments and checks. (DNW-A22: CR8-1A, DNW-A22P: CR8-1A PS)

Playback portion	Specifications[dB]		Adjustment point
	DNW-A22	DNW-A22P	
5:00 to 5:55 (1 kHz, −20 VU)	Measured value makes 0 dB (reference).	Measured value makes 0 dB (reference).	–
6:00 to 6:25 (40 Hz, −20 VU)	C.V. $^{+0.7}_{-1.7}$	C.V. $^{+0.7}_{-1.7}$	(Check only)
6:30 to 6:55 (7 kHz, −20 VU)	C.V. ±0.3	C.V. ±0.4	⊘RV501/APR-12(A-1)
7:00 to 7:25 (10 kHz, −20 VU)	C.V. ±0.3	C.V. ±0.4	(Check only)
7:30 to 7:55 (15 kHz, −20 VU)	C.V. $^{+0.3}_{-1.0}$	C.V. $^{-1.0}_{-1.7}$	⊘RV500/APR-12(A-1)

The each correction values (C.V.) are recorded on the label of the alignment tape.

Note

If the specifications are not met, switch S500/APR-12(A-1) and adjust again.

CH2 adjustment

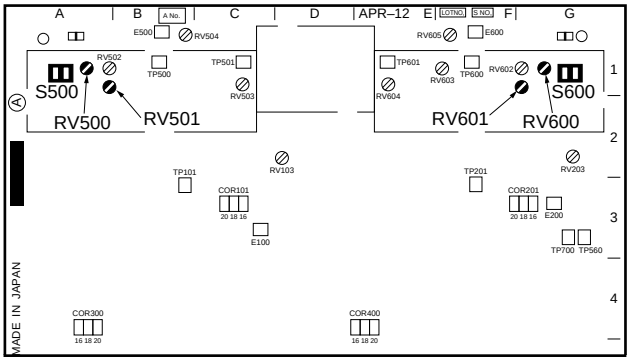
(1) Connect the input of audio analyzer to AUDIO OUTPUT CH2 connector.
(2) Playback the following specified portions (−20 VU) of the alignment tape CR8-1A or CR8-1A PS, and perform the adjustments and checks. (DNW-A22: CR8-1A, DNW-A22P: CR8-1A PS)

Playback portion	Specifications[dB]		Adjustment point
	DNW-A22	DNW-A22P	
5:00 to 5:55 (1 kHz, −20 VU)	Measured value makes 0 dB (reference).	Measured value makes 0 dB (reference).	–
6:00 to 6:25 (40 Hz, −20 VU)	C.V. $^{+0.7}_{-1.7}$	C.V. $^{+0.7}_{-1.7}$	(Check only)
6:30 to 6:55 (7 kHz, −20 VU)	C.V. ±0.3	C.V. ±0.4	⊘RV601/APR-12(G-1)
7:00 to 7:25 (10 kHz, −20 VU)	C.V. ±0.3	C.V. ±0.4	(Check only)
7:30 to 7:55 (15 kHz, −20 VU)	C.V. $^{+0.3}_{-1.0}$	C.V. $^{-1.0}_{-1.7}$	⊘RV600/APR-12(G-1)

The each correction values (C.V.) are recorded on the label of the alignment tape.

Note

If the specifications are not met, switch S600/APR-12(G-1) and adjust again.



APR-12 Board (A Side)

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3. LAU PB Frequency Response Adjustment (METAL)

Note

Perform this adjustment for only DNW-A22P.

Measuring equipment: Audio analyzer

CH1 adjustment

(1) Connect the input of audio analyzer to AUDIO OUTPUT CH1 connector.
(2) Playback the following specified portions (−20 VU) of alignment tape CR8-1A PS, and perform the adjustment and checks.

Play back portion	Specifications[dB]	Adjustment point
5:00 to 5:55 (1 kHz, −20 VU)	Measured value makes 0 dB (reference).	–
6:00 to 6:25 (40 Hz, −20 VU)	C.V. $^{+0.7}_{-1.7}$	(Check only)
6:30 to 6:55 (7 kHz, −20 VU)	C.V. ±0.3	(Check only)
7:00 to 7:25 (10 kHz, −20 VU)	C.V. ±0.4	(Check only)
7:30 to 7:55 (15 kHz, −20 VU)	C.V. ±0.5	⊘RV502/APR-12(A-1)

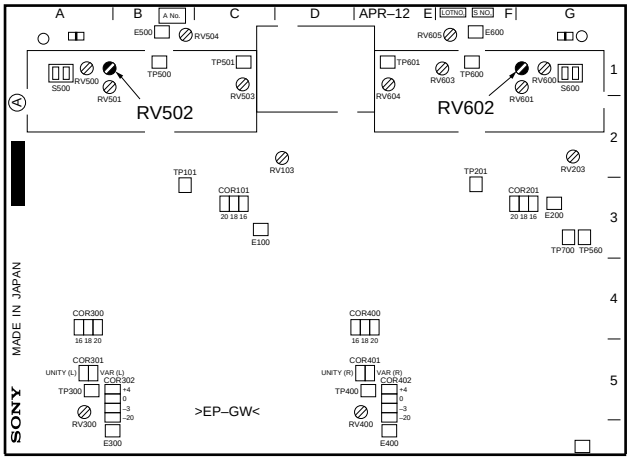
The each correction values (C.V.) are recorded on the label of the alignment tape.

CH2 adjustment

(1) Connect the input of audio analyzer to AUDIO OUTPUT CH2 connector.
(2) Playback the following specified portions (−20 VU) of alignment tape CR8-1A PS, and perform the adjustment and checks.

Play back portion	Specifications[dB]	Adjustment part
5:00 to 5:55 (1 kHz, −20 VU)	Measured value makes 0 dB (reference).	–
6:00 to 6:25 (40 Hz, −20 VU)	C.V. $^{+0.7}_{-1.7}$	(Check only)
6:30 to 6:55 (7 kHz, −20 VU)	C.V. ±0.3	(Check only)
7:00 to 7:25 (10 kHz, −20 VU)	C.V. ±0.4	(Check only)
7:30 to 7:55 (15 kHz, −20 VU)	C.V. ±0.5	⊘RV602/APR-12(G-1)

The each correction values (C.V.) are recorded on the label of the alignment tape.



APR-12 Board (A Side)

4. LAU Dolby Level Adjustment

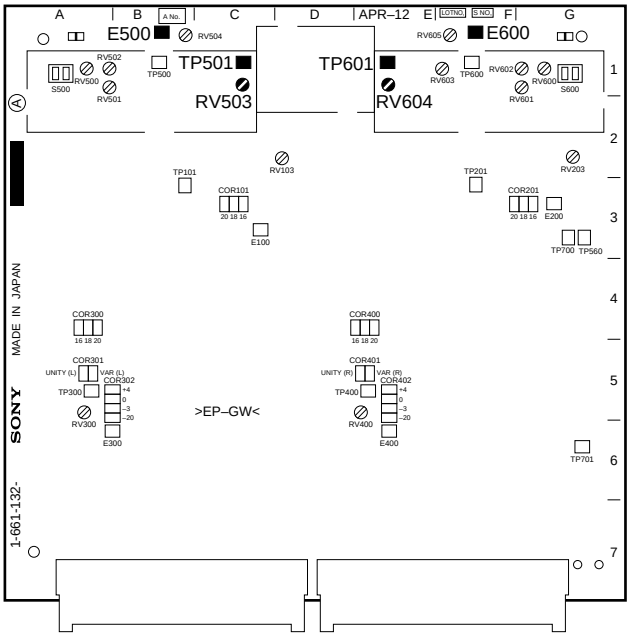
Measuring equipment: Audio level meter

CH1 adjustment

(1) Connect the audio level meter to TP501/APR-12(C-1).
GND : E500/APR-12(B-1)
(2) Playback the 1 kHz, 0 VU portion (0:00 to 2:55) of alignment tape CR8-1A or CR8-1B PS, and perform the level adjustment.
(DNW-A22: CR8-1A, DNW-A22P: CR8-1B PS)
Adjustment point: ◓RV503/APR-12(C-1)
Specification: −10.0 ±0.1 dBu

CH2 adjustment

(1) Connect the audio level meter to TP601/APR-12(E-1).
GND : E600/APR-12(F-1)
(2) Playback the 1 kHz, 0 VU portion (0:00 to 2:55) of alignment tape CR8-1A or CR8-1B PS, and perform the level adjustment.
(DNW-A22: CR8-1A, DNW-A22P: CR8-1B PS)
Adjustment point: ◓RV604/APR-12(E-1)
Specification: −10.0 ±0.1 dBu



APR-12 Board (A Side)

5. LAU PB Level Adjustment

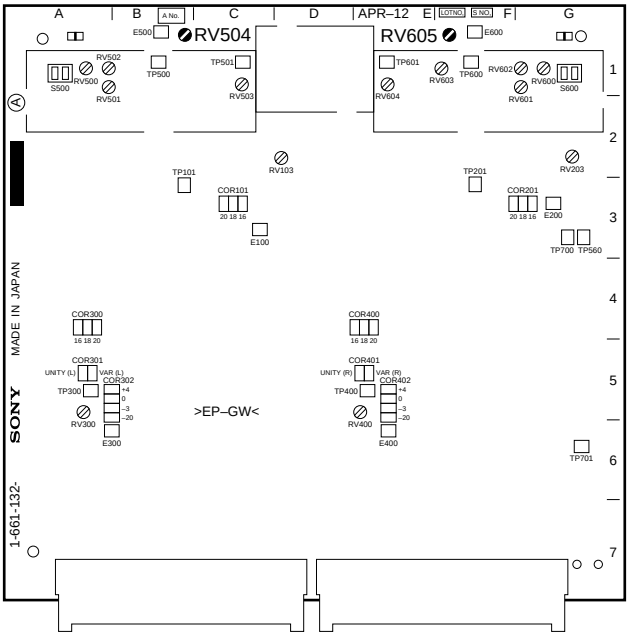
Measuring equipment: Audio analyzer (terminated with 600 Ω)

CH1 adjustment

(1) Connect the input of audio analyzer to AUDIO OUTPUT CH1 connector.
(2) Playback the 1 kHz, 0 VU portion (0:00 to 2:55) of alignment tape CR8-1A or CR8-1B PS, and perform the level adjustment.
(DNW-A22: CR8-1A, DNW-A22P: CR8-1B PS)
Adjustment point: ⊘RV504/APR-12(B-1)
Specification: +4.0 ±0.1 dBu

CH2 adjustment

(1) Connect the input of audio analyzer to AUDIO OUTPUT CH2 connector.
(2) Playback the 1 kHz, 0 VU portion (0:00 to 2:55) of alignment tape CR8-1A or CR8-1B PS, and perform the level adjustment.
(DNW-A22: CR8-1A, DNW-A22P: CR8-1B PS)
Adjustment point: ⊘RV605/APR-12(F-1)
Specification: +4.0 ±0.1 dBu



APR-12 Board (A Side)

6. LAU PB Phase Adjustment

Measuring equipment: Oscilloscope (X-Y mode)

(1) Connect and set the oscilloscope as follows:
CH-1: Pin 2 (X) of AUDIO OUT CH1 connector [GND: Pin 1(G)], AC
CH-2: Pin 2 (X) of AUDIO OUT CH2 connector [GND: Pin 1(G)], AC

Note

Instead of the above connectors, following connection is acceptable.
Connect the two XLR-to-pigtail cables to the above mentioned connectors, and then connect the CH-1 and CH-2 of oscilloscope to each pigtail. Two XLR-to-pigtail cables should be the same length and same wire color.

(2) For the DNW-A22, playback the 10 kHz, −10 VU portion (3:00 to 4:55) of the alignment tape CR8-1A.
For the DNW-A22P, playback the 15 kHz, 0 VU portion (3:00 to 4:55) of the alignment tape CR8-1B PS.

(3) Observe the lissajous waveform on the oscilloscope.

(4) Align the vertical and horizontal amplitudes of lissajous waveform to 60 mm square with the VOLTS/DIV and VAR controls of the oscilloscope.

(5) Minimize the gap A of lissajous waveform.
Adjustment point: ◓RV603/APR-12(F-1)
Specification: A ≦5.2 mm (Refer to Figure 2.)

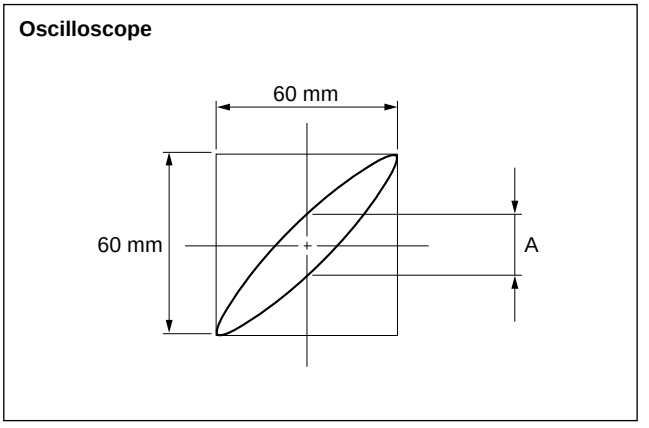
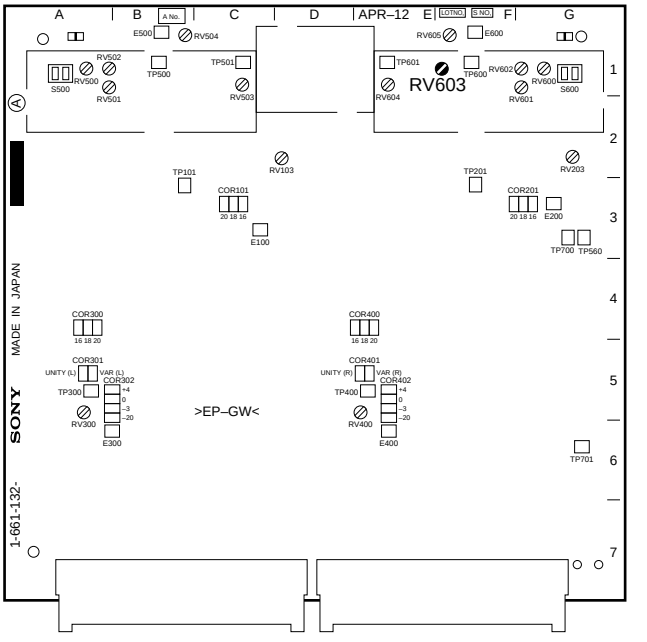


Figure 2. Waveform of LAU PB Phase Adjustment



APR-12 Board (A Side)

6-3. DM-89 Board Replacement

The electrical adjustments are essential after the DM-89 board is replaced.
To perform the electrical adjustments, the following equipment and fixtures are required.

Note

The DM-89 board of the service parts code suffix-A cannot be used to DNW-A22/A22P. Some setting data are different according to the board number suffix (XX of 1-648-541-XX) of DM-89 board.
Be sure to confirm the suffixes of service parts code and board number before replacement. The service parts code is indicated on near the top right corner (G-1) of A side of DM-89 board, and the board number is indicated on the left margin (A-6) of A side.

- Composite waveform/vector monitor
  For DNW-A22: TEKTRONIX 1750 or 1780R or equivalent
  For DNW-A22P: TEKTRONIX 1751 or 1781R or equivalent
- Oscilloscope: TEKTRONIX 2465B or equivalent
- Spectrum analyzer: ADVANTEST R3261A or equivalent
- Network analyzer: ANRITSU MS420B or equivalent
- Digital voltage meter: ADVANTEST TR6845 or equivalent
- Composite video monitor
- Extension board: EX-377 (SONY part No. J-6269-810-A)
- 75 Ω terminators
- Cleaning tape: BCT-5CLN (SONY standard products)
- Alignment tapes
  For DNW-A22: CR5-1B (SONY part No. 8-960-096-41) and
  CR5-2A (SONY part No. 8-960-097-44)
  For DNW-A22P: CR5-1B PS (SONY part No. 8-960-096-91) and
  CR5-2A PS (SONY part No. 8-960-098-44)

6-3-1. Replacement Procedure

Note

Turn off the POWER switch before starting the replacement.

(1) Remove the upper lid, board retainer (S), and DM-89 (original) board.
(Refer to “6-1-3. Plug-in Board Pulling out/Insertion”.)
(2) After inserting the extension board EX-377 to the slot for DM-89 board, and then connect a new DM-89 board to the extension board.
(3) Clean the video heads once. (Refer to “5-2-1. Cleaning by Cleaning Tape”.)
(4) Perform the electrical adjustments (Section 6-4-2).
(5) For DNW-A22 only
Return the ITEM-709 and ITEM-713 of setup extend menu to previous settings after the electrical adjustments are completed.
(6) Return the states of S1100-1 on the SS-63 board and control panels to their previous states.
(7) Turn off the power.
(8) Remove the adjusted DM-89 board from the extension board, then pull out the extension board.
(9) Install the board retainer (S) and upper lid after inserting the adjusted DM-89 board.
(Refer to “6-1-3. Plug-in Board Pulling out/Insertion”.)

6-3-2. Electrical Adjustments

Adjustment Items

No.	Item		Adjustment point	Notes
0	Preparation			
1	Initial data setting		All data of A3 : BETACAM PB ADJUST	
2	EQ RF output level adjustment			
		METAL Y	A30 : EQ VR : RF GAIN METAL-Y-A A30 : EQ VR : RF GAIN METAL-Y-B	TP100/DM-89
		METAL C	A30 : EQ VR : RF GAIN METAL-C-A A30 : EQ VR : RF GAIN METAL-C-B	TP300/DM-89
		OXIDE C	A30 : EQ VR : RF GAIN OXIDE-C-A A30 : EQ VR : RF GAIN OXIDE-C-B	TP300/DM-89
		OXIDE Y	A30 : EQ VR : RF GAIN OXIDE-Y-A A30 : EQ VR : RF GAIN OXIDE-Y-B	TP100/DM-89
		Data save	A3F : NV-RAM CONTROL	
3	Cosine equalizer adjustment			
	METAL Y	Group delay	⊘RV101/DM-89, ⊘RV102/DM-89	TP104/DM-89
		Main	A33 : DM VR 2 : MAIN METAL-Y-A A33 : DM VR 2 : MAIN METAL-Y-B	TP3/DM-89
		Sub	A34 : DM VR 3 : SUB METAL-Y-A A34 : DM VR 3 : SUB METAL-Y-B	DNW-A22: Set the data to AF DNW-A22P: TP2/DM-89
	METAL C	Group delay	⊘RV301/DM-89, ⊘RV302/DM-89	TP304/DM-89
		Main	A33 : DM VR 2 : MAIN METAL-C-A A33 : DM VR 2 : MAIN METAL-C-B	TP7/DM-89
		Sub	A34 : DM VR 3 : SUB METAL-C-A A34 : DM VR 3 : SUB METAL-C-B	DNW-A22: Set the data to 70 DNW-A22P: TP6/DM-89
	OXIDE C	Group delay	⊘RV303/DM-89, ⊘RV304/DM-89	TP304/DM-89
		Main	A33 : DM VR 2 : MAIN OXIDE-C-A A33 : DM VR 2 : MAIN OXIDE-C-B	TP7/DM-89
		Sub	A34 : DM VR 3 : SUB OXIDE-C-A A34 : DM VR 3 : SUB OXIDE-C-B	TP6/DM-89
	OXIDE Y	Group delay	⊘RV104/DM-89	TP104/DM-89
		Main	A33 : DM VR 2 : MAIN OXIDE-Y-A A33 : DM VR 2 : MAIN OXIDE-Y-B	TP3/DM-89
		Sub	A34 : DM VR 3 : SUB OXIDE-Y-A A34 : DM VR 3 : SUB OXIDE-Y-B	TP2/DM-89
	OMC DC offset		A35 : DM VR 4 : OMC DC METAL-Y	Set the data to E4
			A35 : DM VR 4 : OMC DC METAL-C A35 : DM VR 4 : OMC DC OXIDE-Y A35 : DM VR 4 : OMC DC OXIDE-C	Set the data to D0
	Data Save		A3F : NV-RAM CONTROL	
4	Cosine equalizer provisional adjustment			

Note

This provisional adjustment explains how to adjust without using the network analyzer as opposed to adjustment (No. 3) using the network analyzer.
Do not perform this provisional adjustment except an urgent maintenance and the network analyzer is not available. If this provisional adjustment is done, it is recommended to perform the adjustment (No. 3) using the network analyzer later.

OMC; Over-Modulation Compensation circuit

(Continue)

(Continued)

No.	Item	Adjustment point		Notes
5	DM RF output level rough adjustment			
		METAL Y	⊘RV211/DM-89	TP3/DM-89
		METAL C	⊘RV406/DM-89	TP7/DM-89
		OXIDE C	⊘RV407/DM-89	TP7/DM-89
		OXIDE Y	⊘RV212/DM-89	TP3/DM-89
6	OMC carrier balance adjustment			
		OXIDE Y	⊘RV107/DM-89, ⊘RV108/DM-89	TP105/DM-89
		OXIDE C	⊘RV307/DM-89, ⊘RV308/DM-89	TP305/DM-89
		METAL C	⊘RV305/DM-89, ⊘RV306/DM-89	TP305/DM-89
		METAL Y	⊘RV105/DM-89, ⊘RV106/DM-89	TP105/DM-89
7	OMC carrier balance provisional adjustment **Note** This provisional adjustment explains how to adjust without using the spectrum analyzer as opposed to adjustment (No. 6) using the spectrum analyzer. Do not perform this provisional adjustment except an urgent maintenance and the spectrum analyzer is not available. If this provisional adjustment is done, it is recommended to perform the adjustment (No. 6) using the spectrum analyzer later.			
8	Demodulator limiter balance adjustment			
		Y	⊘RV502/DM-89	TP501/DM-89
		C	⊘RV702/DM-89	TP8/DM-89
9	Non-liner output level adjustment			
		METAL Y	⊘RV503/DM-89	TP505/DM-89
		METAL C	⊘RV703/DM-89	TP705/DM-89 (For DNW-A22P)
		C	⊘RV704/DM-89	TP705/DM-89 (For DNW-A22)
		OXIDE C	⊘RV704/DM-89	TP705/DM-89 (DNW-A22P only)
		OXIDE Y	⊘RV504/DM-89	TP505/DM-89
10	PB frequency response adjustment			
		METAL Y	A32 : DM VR 1 : EQ1 METAL-Y-A A32 : DM VR 1 : EQ1 METAL-Y-B	VIDEO OUTPUT COMPOSITE 1
		METAL C	A32 : DM VR 1 : EQ1 METAL-C-A A32 : DM VR 1 : EQ1 METAL-C-B	TP8/DM-89
		OXIDE Y	A32 : DM VR 1 : EQ1 OXIDE-Y-A A32 : DM VR 1 : EQ1 OXIDE-Y-B	VIDEO OUTPUT COMPOSITE 1
		OXIDE C	A32 : DM VR 1 : EQ1 OXIDE-C-A A32 : DM VR 1 : EQ1 OXIDE-C-B	TP8/DM-89
		Data save	A3F : NV-RAM CONTROL	
11	Drop-out compensation equalizer adjustment			
		METAL Y	⊘RV201/DM-89	TP203/DM-89
		METAL C	⊘RV401/DM-89	TP403/DM-89
		OXIDE Y	⊘RV202/DM-89	RV202/DM-89
		OXIDE C	⊘RV402/DM-89	RV402/DM-89
12	DM RF output level adjustment			
		METAL Y	⊘RV211/DM-89	TP3/DM-89
		METAL C	⊘RV406/DM-89	TP7/DM-89
		OXIDE C	⊘RV407/DM-89	TP7/DM-89
		OXIDE Y	⊘RV212/DM-89	TP3/DM-89

(Continue)

(Continued)

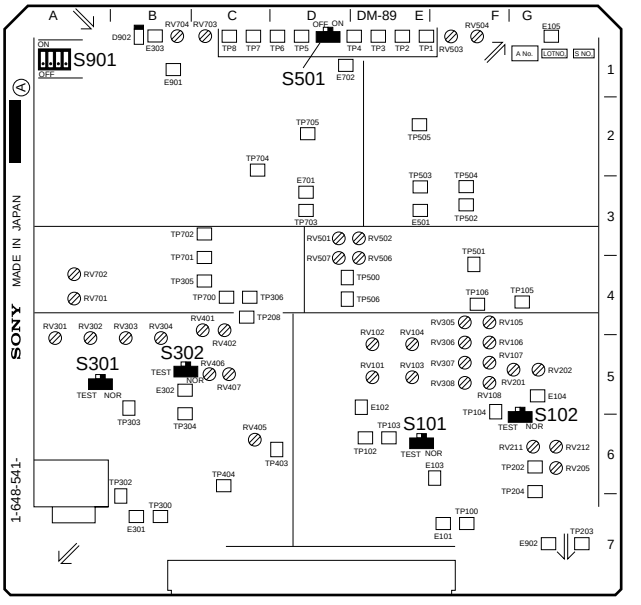
No.	Item		Adjustment point	Notes
13	RF envelope adjustment			
		Y	⊘RV205/DM-89	TP203/DM-89
		C	⊘RV405/DM-89	TP403/DM-89
		TH H level	A36 : DM VR 5 : ENV-TH-H	Set the data to 20
		TH L level	A36 : DM VR 5 : ENV-TH-L	Set the data to 10
		Data save	A3F : NV-RAM CONTROL	
14	DM search picture adjustment			
		Offset	⊘RV506/DM-89	TP500/DM-89
		Y	⊘RV501/DM-89	TP502/DM-89
		C	⊘RV701/DM-89	TP702/DM-89
		Gain	⊘RV507/DM-89	TP1/DM-89
15	Guard band width adjustment			
		METAL	A35 : DM VR 4 : GUARD BAND METAL-Y A35 : DM VR 4 : GUARD BAND METAL-C	
		OXIDE	A35 : DM VR 4 : GUARD BAND OXIDE-Y A35 : DM VR 4 : GUARD BAND OXIDE-C	
		Data save	A3F : NV-RAM CONTROL	
16	Video output level adjustment			
		METAL Y	⊘RV101/TBC-24	VIDEO OUTPUT COMPOSITE 1
		METAL C	⊘RV201/TBC-24	VIDEO OUTPUT COMPOSITE 1
		OXIDE Y	⊘RV504/DM-89	VIDEO OUTPUT COMPOSITE 1
		OXIDE C	⊘RV704/DM-89	VIDEO OUTPUT COMPOSITE 1 (DNW-A22P only)

0. Preparation

Setting (Check) of the switches on the DM-89 board

Confirm that the switches are factory settings.

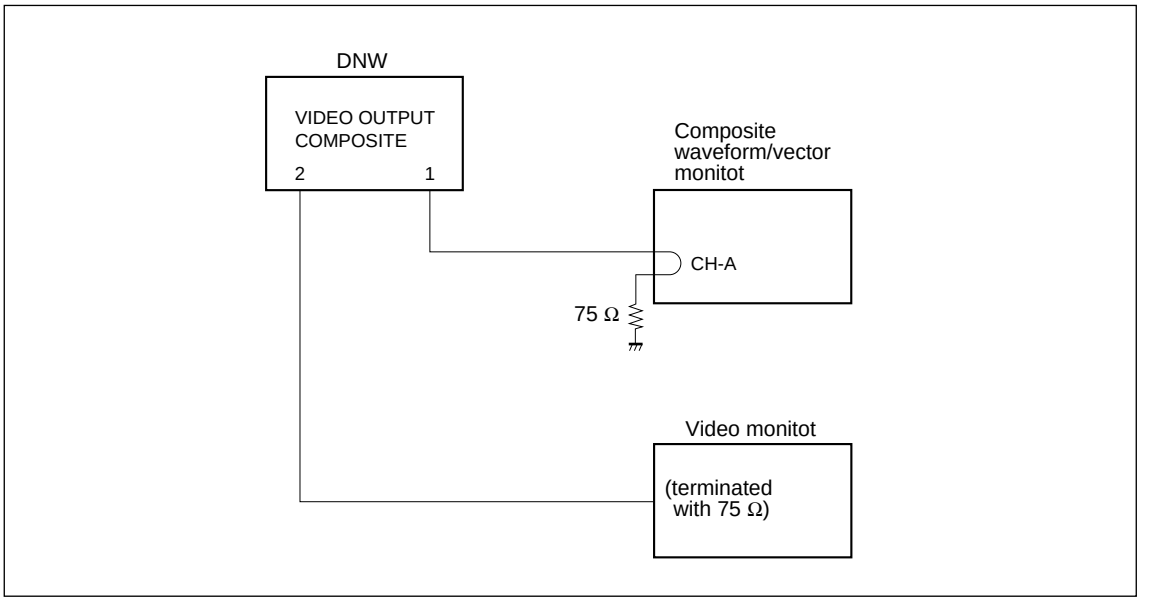
Ref. No.		Factory setting
S101		NORMAL POSITION (right side)
S102		NORMAL POSITION (right side)
S301		NORMAL POSITION (right side)
S302		NORMAL POSITION (right side)
S501		ON (right side)
S901	1	OFF (down side)
	2	OFF (down side)
	3	OFF (down side)
	4	OFF (down side)



DM-89 Board (A Side)

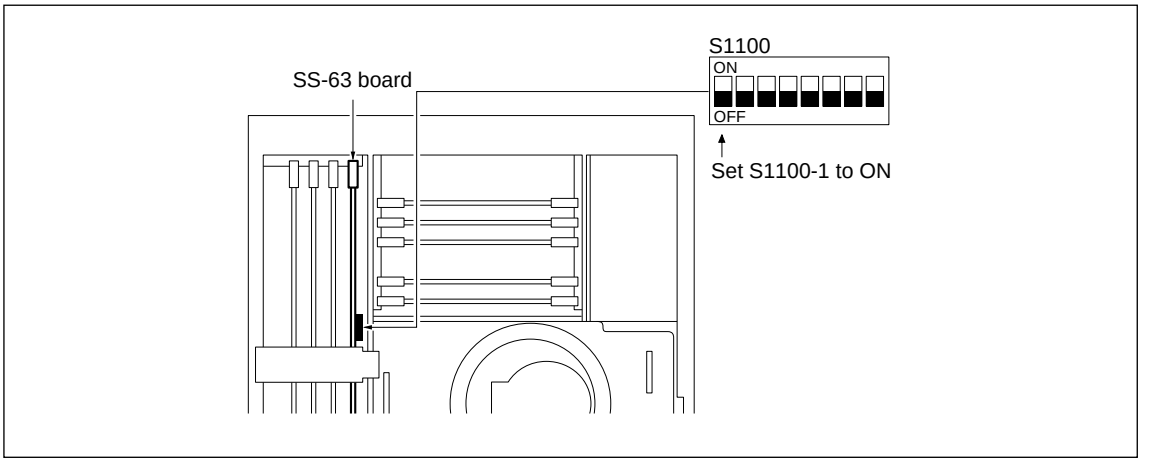
Connection

Connect the compositewaveform monitor and video monitor as shown below.



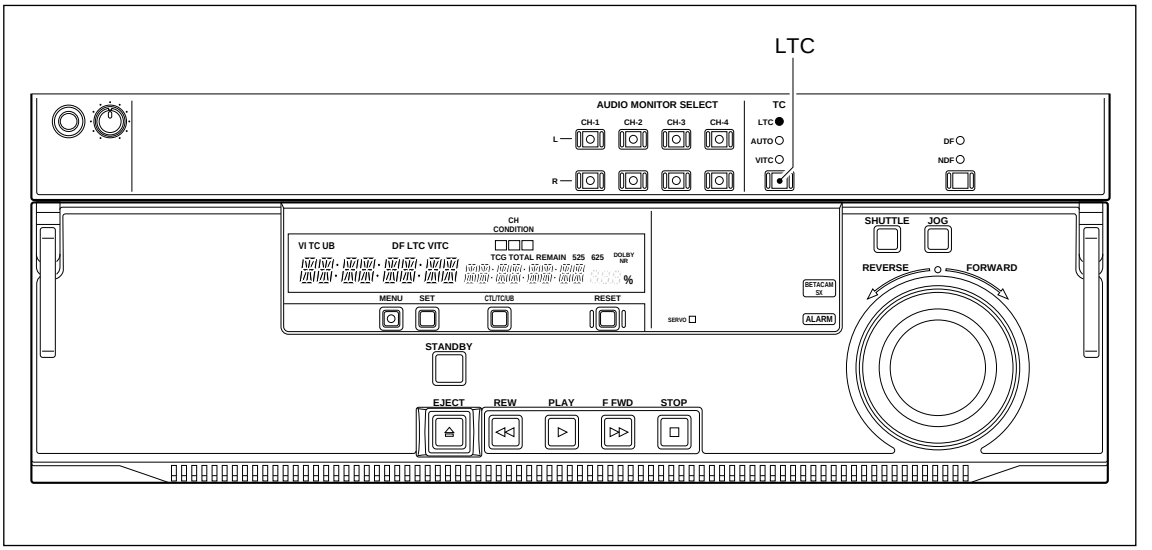
Setting of DNW

(1) Set S1100-1 on SS-63 board to ON to treat the extended menu of the setup menu.

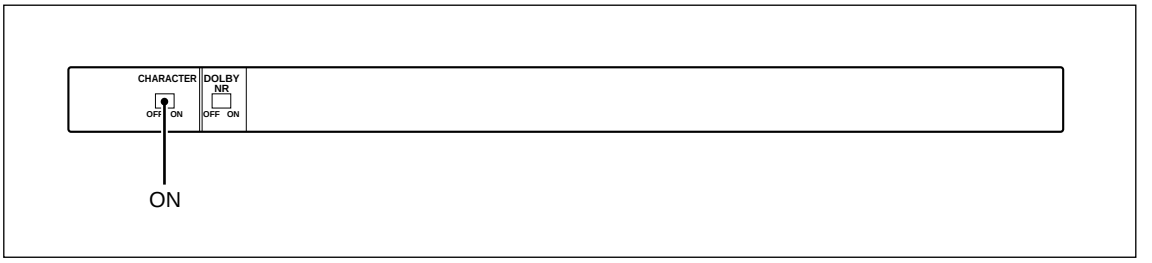


S1100 of SS-63 Board

(2) Turn on the power, and set each control panel as shown below.



Upper/Lower Control Panels



Sub Control Panel

http://getMANUAL.com

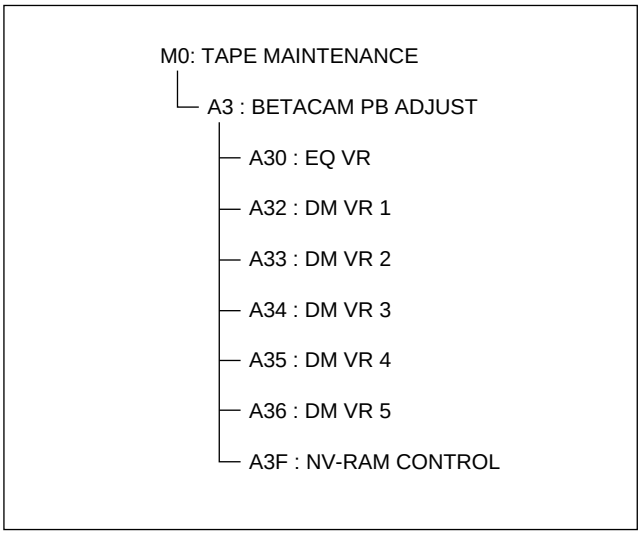
(3) Enter the maintenance mode

To enter the maintenance mode, push S1101 on the SS-63 board.

Notes

Describes the operation of the maintenance mode as follows:

The sub mode and menus of the maintenance mode that are used after replacing the DM-89 board are as shown below.



• How to enter the next menu

(1) Push the JOG button once.
= **Search dial enters into the JOG mode.**

(2) To set the cursor (✻ mark) to the desired menu (mode), turn the search dial.

(3) Push the SET button once.

• How to exit the current menu (mode)

Push the MENU button once.

Note

If the MENU button is pushed several times, the maintenance mode exits.

• How to change the data value

(1) To set the cursor (✻ mark) to the item, turn the search dial.

(2) Turn the search dial slowly while pressing the JOG button. = **Data value changes.**
REVERSE direction: decrease the data value (00's next is FF)
FORWARD direction: increase the data value (FF's next is 00)

Note

During adjustment, change the rotational direction of the search dial according to the change of waveform that is displayed on the measuring equipment.

• How to save the data

(1) To set the cursor (✻ mark) to A3F : NV-RAM CONTROL, turn the search dial.

(2) Push the SET button once.

(3) To set the cursor (✻ mark) to "SAVE ALL ADJUST DATA", turn the search dial.

(4) Push the SET button once.

• How to operate (playback, rewind, forward, etc.) the tape when DNW enters into the maintenance mode

(1) Enter any menu of A30 to A36.

(2) To pause the maintenance mode operation, push the SET button. = **It enables tape operation.**

Note

Changes the time data display area on the lower control panel to normal operation mode (time code display), and displays the ■ mark to the top right corner of menu screen on the video monitor.

(3) After the tape operation was completed, push the MENU button to cancel the pause of maintenance mode.

Note

Returns the displays of the time data display area and video monitor to their previous states.

1. Initial Data Setting

(1) Enter A3 : BETACAM PB ADJUST of the maintenance mode.
(2) Enter A30 : EQ VR.
(3) Set the specified data to all items of A30 : EQ VR.
(For setting data, refer to the table below.)
(4) To exit A30 : EQ VR, push the MENU button once.
(5) Enter A32 : DM VR 1.
(6) Set the specified data to all items of A32 : DM VR 1.
(For setting data, refer to the table below.)
(7) To exit A32 : DM VR 1, push the MENU button once.
(8) Enter A33 : DM VR 2.
(9) Set the specified data to all items of A33 : DM VR 2.
(For setting data, refer to the table below.)
(10) To exit A33 : DM VR 2, push the MENU button once.

Item of A3 :BETACAM ADJUST		Setting data for DNW-A22	Setting data for DNW-A22P
A30 : EQ VR	RF GAIN METAL-Y-A	55	8E
	RF GAIN METAL-Y-B	55	8E
	RF GAIN METAL-C-A	3F	6C
	RF GAIN METAL-C-B	3F	6C
	RF GAIN OXIDE-Y-A	72	9C
	RF GAIN OXIDE-Y-B	72	9C
	RF GAIN OXIDE-C-A	5A	81
	RF GAIN OXIDE-C-B	5A	81
A32 : DM VR 1	EQ1 METAL-Y-A	79	80
	EQ1 METAL-Y-B	79	80
	EQ1 METAL-C-A	7C	90
	EQ1 METAL-C-B	7C	90
	EQ1 OXIDE-Y-A	A6	A1
	EQ1 OXIDE-Y-B	A6	A1
	EQ1 OXIDE-C-A	90	AD
	EQ1 OXIDE-C-B	90	AD
A33 : DM VR 2	MAIN METAL-Y-A	CD	B7
	MAIN METAL-Y-B	CD	B7
	MAIN METAL-C-A	8E	8D
	MAIN METAL-C-B	8E	8D
	MAIN OXIDE-Y-A	A6	A8
	MAIN OXIDE-Y-B	A6	A8
	MAIN OXIDE-C-A	9E	9E
	MAIN OXIDE-C-B	9E	9E

(11) Enter A34 : DM VR 3.
(12) Set the specified data to all items of A34 : DM VR 3.
(For setting data, refer to the table below.)
(13) To exit A32 : DM VR 1, push the MENU button once.
(14) Enter A35 : DM VR 4.
(15) Set the specified data to all items of A35 : DM VR 4.
(For setting data, refer to the table below.)

Note

Some setting data are different according to the board number suffix (XX of 1-648-541-XX) of DM-89 board.

(16) To exit A35 : DM VR 4, push the MENU button once.
(17) Enter A36 : DM VR 5.
(18) Set the specified data to all items of A36 : DM VR 5.
(For setting data, refer to the table below.)
(19) To exit A36 : DM VR 5, push the MENU button once.
(20) Enter A3F : NV-RAM CONTROL of the maintenance mode.
(21) Execute “SAVE ALL ADJUST DATA”.
(22) Check that the message “Save Complete” is displayed on the video monitor.
(23) To exit A3F : NV-RAM CONTROL, push the MENU button once.

Item of A3 :BETACAM ADJUST		Setting data for DNW-A22	Setting data for DNW-A22P
A34 : DM VR 3	SUB METAL-Y-A	AF	B2
	SUB METAL-Y-B	AF	B2
	SUB METAL-C-A	70	91
	SUB METAL-C-B	70	91
	SUB OXIDE-Y-A	B2	BB
	SUB OXIDE-Y-B	B2	BB
	SUB OXIDE-C-A	A7	A8
	SUB OXIDE-C-B	A7	A8
A35 : DM VR 4	GUARD BAND METAL-Y	1D (suffix-13 only: 38)	27 (suffix-13 only: 29)
	GUARD BAND METAL-C	1C (suffix-13 only: 21)	23 (suffix-13 only: 16)
	GUARD BAND OXIDE-Y	32 (suffix-13 only: 48)	2F (suffix-13 only: 3B)
	GUARD BAND OXIDE-C	31 (suffix-13 only: 30)	29 (suffix-13 only: 16)
	OMC DC METAL-Y	E4	E4
	OMC DC METAL-C	D0	D0
	OMC DC OXIDE-Y	D0	D0
	OMC DC OXIDE-C	D0	D0
A36 : DM VR 5	DO TH METAL-Y	15	1E
	DO TH METAL-C	14	1D
	DO TH OXIDE-Y	2A	2A
	DO TH OXIDE-C	28	28
	ENV-TH-H	20	20
	ENV-TH-L	10	10

2. EQ RF Output Level Adjustment

Note

Wait for more than 20 minutes after turning on the power, then perform the adjustments.

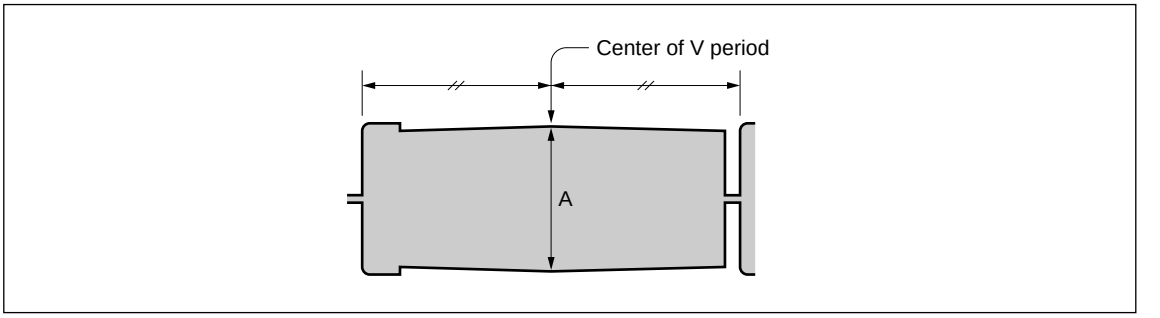
Measuring equipment: Oscilloscope (Band width limit: ON)

(1) Enter A30 : EQ VR of the maintenance mode.
(2) Connect and set the oscilloscope as follows:
CH-1: TP100/DM-89(F-7), AC 100 mV/DIV, 2 ms/DIV, GND: E101/DM-89(F-7)
Trigger: TP4/DM-89(E-1), DC 1 V/DIV, GND: E702/DM-89(D-1)
(3) METAL Y adjustment
Playback the flat field signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment. (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)

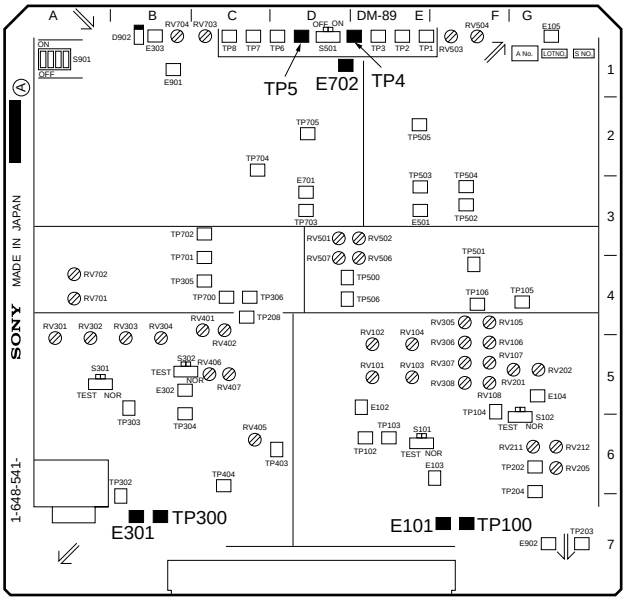
Note

Adjust each signal of Y-A and Y-B channels.
Set the trigger of oscilloscope to − slope before adjusting the Y-A channel.
Set to + slope before adjusting the Y-B channel.

Adjustment points: Y-A channel: A30 : EQ VR : RF GAIN METAL-Y-A
Y-B channel: A30 : EQ VR : RF GAIN METAL-Y-B
Specifications (Y-A and Y-B channels): A = 380 ±20 mV p-p



(4) Stop the playback of the alignment tape CR5-1B/CR5-1B PS.



DM-89 Board (A Side)

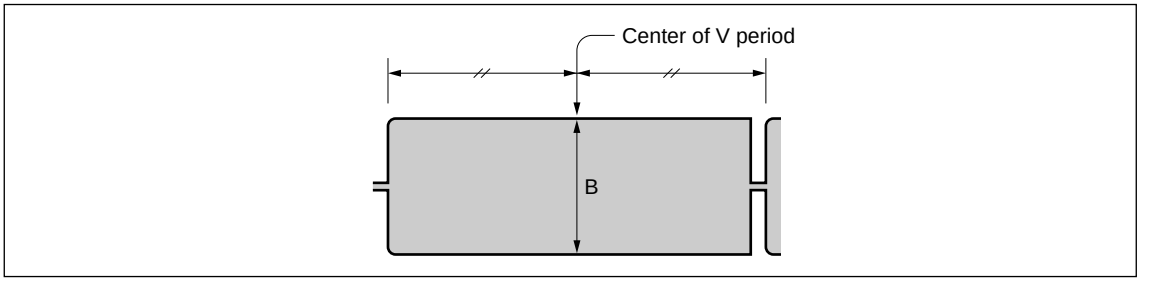
(5) Change the connection of the oscilloscope as follows:
CH-1: TP300/DM-89(B-7), GND: E301/DM-89(B-7)
Trigger: TP5/DM-89(D-1), GND: E702/DM-89(D-1)

(6) METAL C adjustment
Playback the flat field signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment. (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)

Note

Adjust each signal of C-A and C-B channels.
Set the trigger of oscilloscope to − slope before adjusting the C-A channel.
Set to + slope before adjusting the C-B channel.

Adjustment points: C-A channel: A30 : EQ VR : RF GAIN METAL-C-A
C-B channel: A30 : EQ VR : RF GAIN METAL-C-B
Specifications (C-A and C-B channels): B = 380 ±20 mV p-p



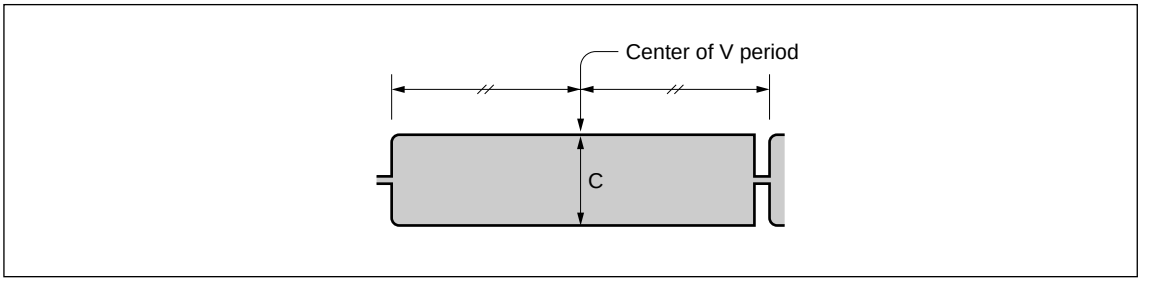
(7) Eject the alignment tape CR5-1B/CR5-1B PS.

(8) OXIDE C adjustment
Playback the 75% color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS, and perform the adjustment. (DNW-A22: CR5-2A, DNW-A22P: CR5-2A PS)

Note

Adjust each signal of C-A and C-B channels.
Set the trigger of oscilloscope to − slope before adjusting the C-A channel.
Set to + slope before adjusting the C-B channel.

Adjustment points: C-A channel: A30 : EQ VR : RF GAIN OXIDE-C-A
C-B channel: A30 : EQ VR : RF GAIN OXIDE-C-B
Specifications (C-A and C-B channels): C = 250 ±20 mV p-p



(9) Stop the playback of the alignment tape CR5-2A/CR5-2A PS.

(10) Change the connection of the oscilloscope as follows:
CH-1: TP100/DM-89(F-7), GND: E101/DM-89(F-7)
Trigger: TP4/DM-89(E-1), GND: E702/DM-89(D-1)

(11) OXIDE Y adjustment

Playback the 75% color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS, and perform the adjustment. (DNW-A22: CR5-2A, DNW-A22P: CR5-2A PS)

Note

Adjust each signal of Y-A and Y-B channels.

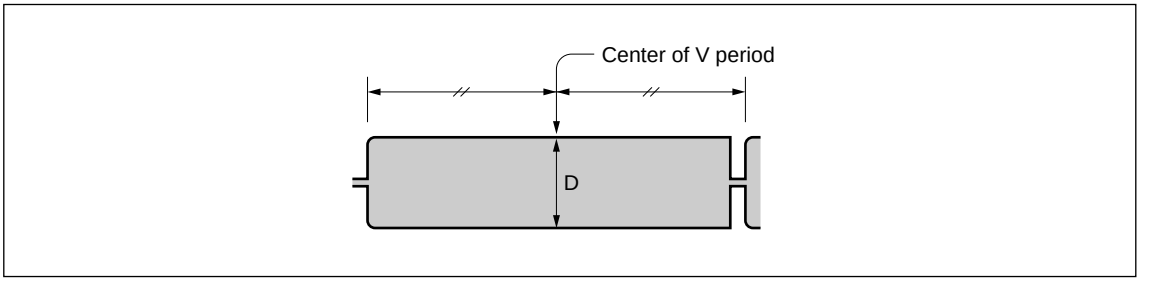
Set the trigger of oscilloscope to − slope before adjusting the Y-A channel.

Set to + slope before adjusting the Y-B channel.

Adjustment points: Y-A channel: A30 : EQ VR : RF GAIN OXIDE-Y-A

Y-B channel: A30 : EQ VR : RF GAIN OXIDE-Y-B

Specifications (Y-A and Y-B channels): D = 250 ±20 mV p-p



(12) Eject the alignment tape CR5-2A/CR5-2A PS.

(13) To exit A30 : EQ VR, push the MENU button once on the lower control panel.

(14) Data save

Enter A3F : NV-RAM CONTROL of the maintenance mode, then execute “SAVE ALL ADJUST DATA”.

(15) Check that the message “Save Complete” is displayed on the video monitor.

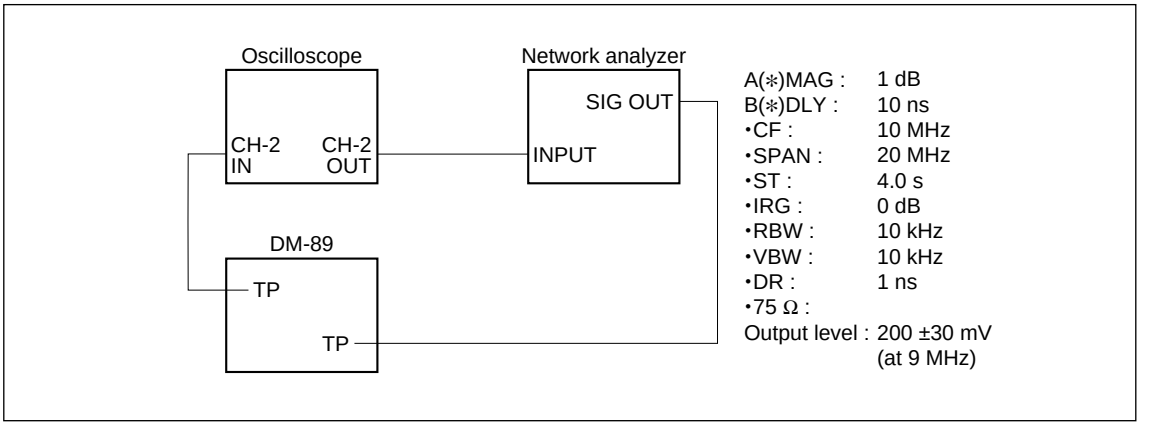
(16) To exit A3F : NV-RAM CONTROL, push the MENU button once.

3. Cosine Equalizer Adjustment

Note

If the network analyzer is not available, perform “4. Cosine Equalizer Provisional Adjustment”.

Measuring equipment: Network analyzer and Oscilloscope (Refer to next figure.)

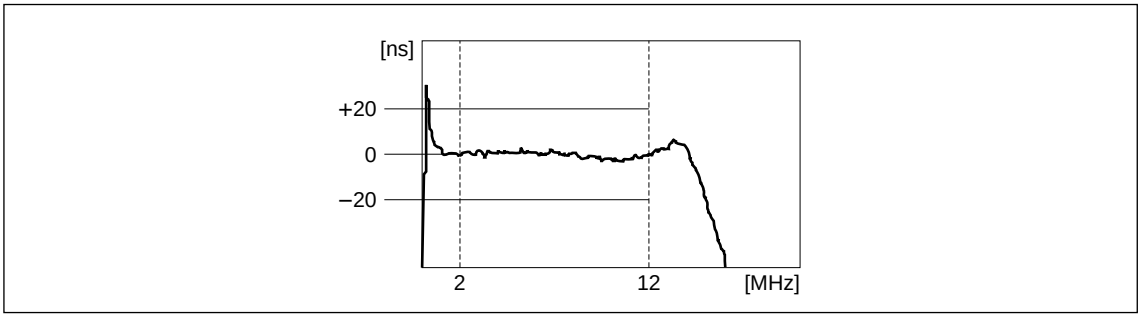


Connection and Setting of Network Analyzer

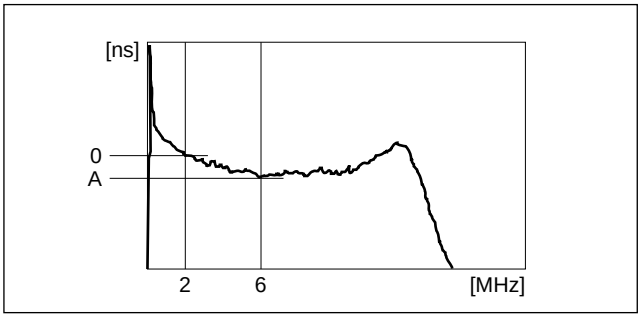
(1) Set No.1 and No.3 of S901/DM-89(A-1) to ON (up side).
(2) Set S101/DM-89(E-6) and S301/DM-89(A-5) to TEST (left) side.
(3) Insert the alignment tape CR5-1B or CR5-1B PS. (STANDBY OFF mode)
(DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)

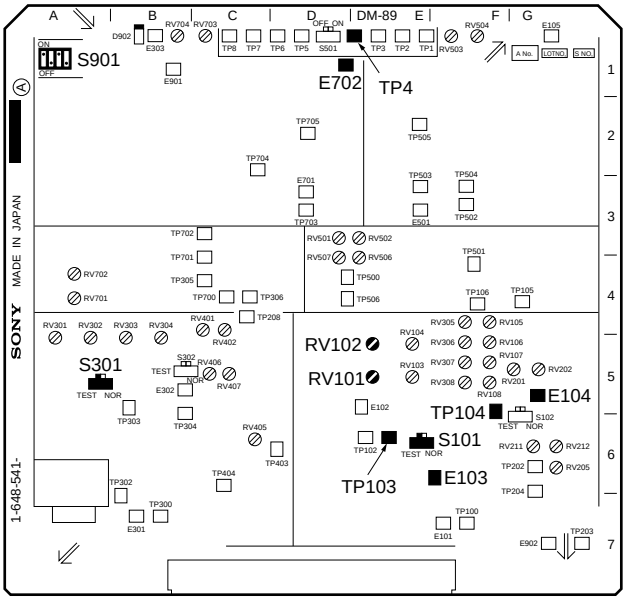
METAL Y adjustment [to step (16)]

(4) Short-circuits TP4/DM-89(E-1) and E702/DM-89(D-1) with a shorting clip.
(5) Connect the output of network analyzer to TP103/DM-89(E-6).
GND: E103/DM-89(F-6)
(6) Connect the oscilloscope's CH-2 to TP104/DM-89(F-5).
GND: E104/DM-89(G-5)
(7) METAL Y, Grope delay adjustment
Adjust the group delay in 2 MHz through 12 MHz to satisfy the specification.
Adjustment Point: ⊘RV101/DM-89(E-5) and ⊘RV102/DM-89(E-5)
Specification: 0 ±20 ns



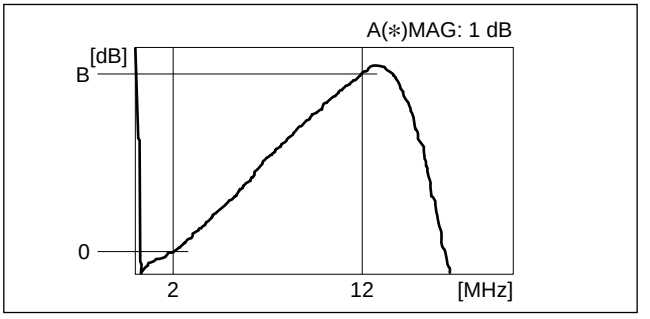
(8) For DNW-A22 only
Adjust the delay time at 6 MHz use 2 MHz as the reference to satisfy the specification.
Adjustment Point: ⊘RV101/DM-89(E-5)
Specification: A = −10 ±3 ns



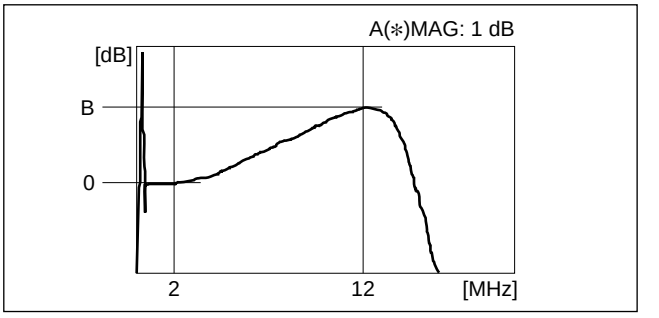


DM-89 Board (A Side)

(9) Enter A33 : DM VR 2 of the maintenance mode.
(10) Connect the oscilloscope's CH-2 to TP3/DM-89(E-1). GND: E702/DM-89(D-1)
(11) METAL Y, Main adjustment
  (i) Adjust the level difference at 12 MHz use 2 MHz as the reference to satisfy the specification.
  Adjustment point: A33 : DM VR 2 : MAIN METAL-Y-A
  Specification: DNW-A22: B = +8.0 ±0.5 dB
  DNW-A22P: B = +3.5 ±0.5 dB



DNW-A22



DNW-A22P

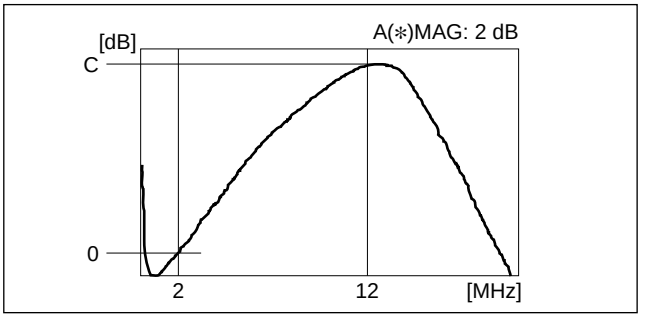
  (ii) Set the data value of A33 : DM VR 2 : MAIN METAL-Y-B to the identical data value as MAIN METAL-Y-A.
(12) To exit A33 : DM VR 2, push the MENU button once.
(13) Enter A34 : DM VR 3 of the maintenance mode.
(14) METAL Y, Sub adjustment

For DNW-A22

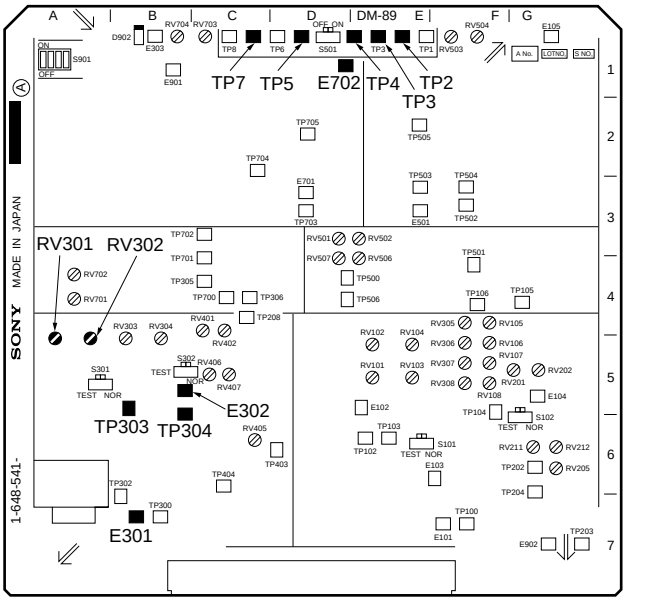
Confirm that the data value of A34 : DM VR 3 : SUB METAL-Y-A and SUB METAL-Y-B are AF.
If not, set them to AF.

For DNW-A22P

  (i) Connect the oscilloscope's CH-2 to TP2/DM-89(E-1). GND: E702/DM-89(D-1)
  (ii) Adjust the level difference at 12 MHz use 2 MHz as the reference to satisfy the specification.
  Adjustment point: A34 : DM VR 3 : SUB METAL-Y-A
  Specification: C = +16.5 ±1.0 dB



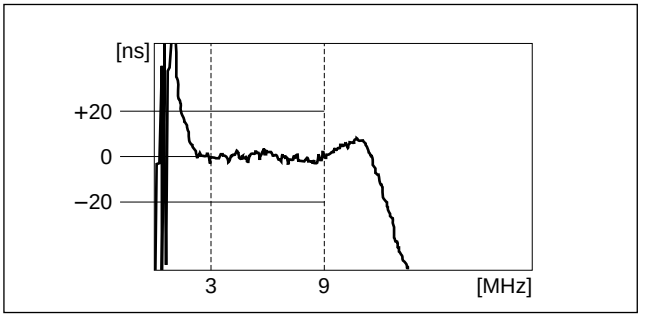
  (iii) Set the data value of A34 : DM VR 3 : SUB METAL-Y-B to the identical data value as SUB METAL-Y-A.
(15) To exit A34 : DM VR 3, push the MENU button once.
(16) Disconnect the shorting clip from TP4/DM-89(E-1).



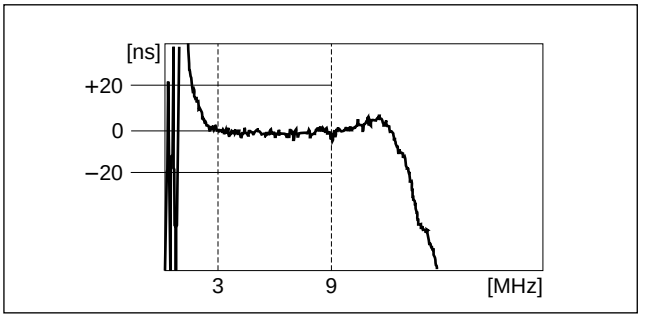
DM-89 Board (A Side)

METAL C adjustment [to step (28)]

(17) Short-circuits TP5/DM-89(D-1) and E702/DM-89(D-1) with a shorting clip.
(18) Connect the output of network analyzer to TP303/DM-89(B-5). GND: E301/DM-89(B-7)
(19) Connect the oscilloscope's CH-2 to TP304/DM-89(B-5). GND: E302/DM-89(B-5)
(20) METAL C, Group delay adjustment
Adjust the group delay in 3 MHz through 9 MHz to satisfy the specification.
Adjustment point: ⊘RV301/DM-89(A-5) and ⊘RV302/DM-89(A-5)
Specification: 0 ±20 ns

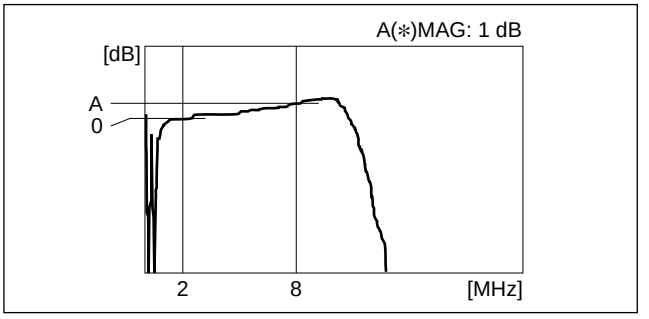


DNW-A22

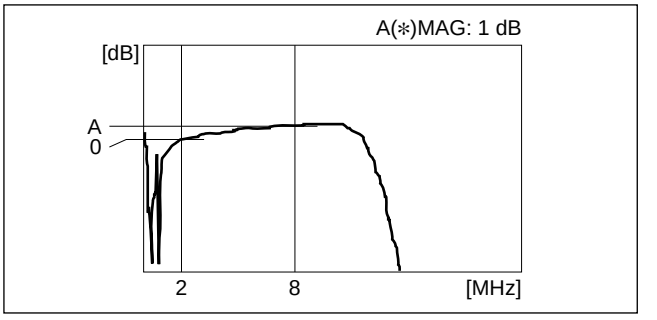


DNW-A22P

(21) Connect the oscilloscope's CH-2 to TP7/DM-89(C-1). GND: E702/DM-89(D-1)
(22) Enter A33 : DM VR 2 of the maintenance mode.
(23) METAL C, Main adjustment
(i) Adjust the level difference at 8 MHz use 2 MHz as the reference to satisfy the specification.
Adjustment point: A33 : DM VR 2 : MAIN METAL-C-A
Specification: A = +0.5 ±0.5 dB



DNW-A22



DNW-A22P

(ii) Set the data value of A33 : DM VR 2 : MAIN METAL-C-B to the identical data value as MAIN METAL-C-A.
(24) To exit A33 : DM VR 2, push the MENU button once.

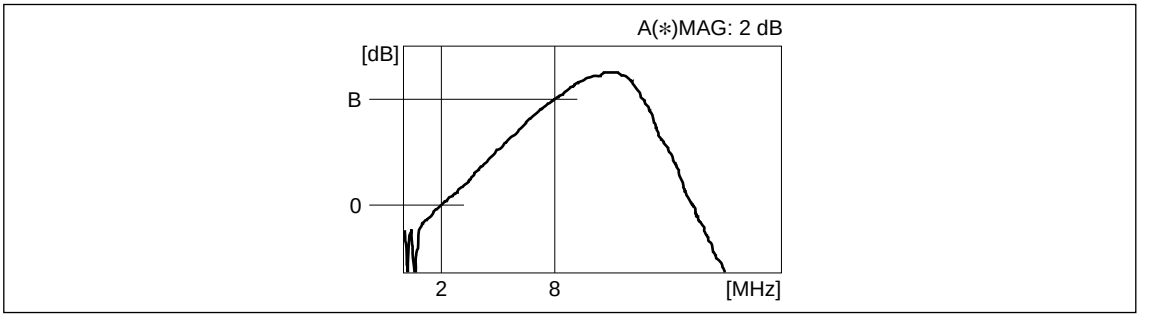
(25) Enter A34 : DM VR 3 of the maintenance mode.
(26) METAL C, Sub adjustment

For DNW-A22

Conform that the data value of A34 : DM VR 3 : SUB METAL-C-A and SUB METAL-C-B are 70. If not, set them to 70.

For DNW-A22P

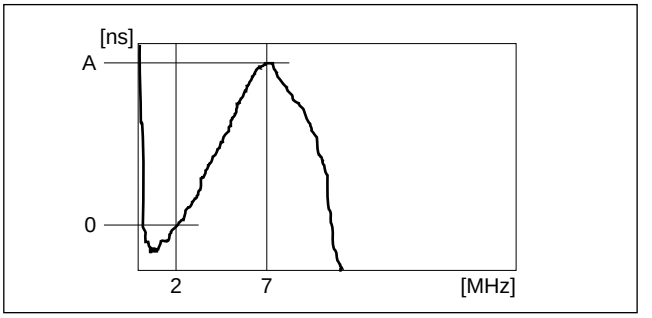
(i) Connect the oscilloscope's CH-2 to TP6/DM-89(D-1). GND : E702/DM-89(D-1)
(ii) Adjust the level difference at 8 MHz use 2 MHz as the reference to satisfy the specification.
Adjustment point: A34 : DM VR 3 : SUB METAL-C-A
Specification: B = +9.2 ±1.0 dB



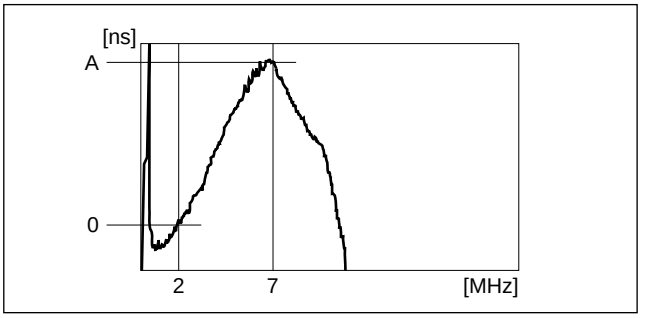
(iii) Set the data value of A34 : DM VR 3 : SUB METAL-C-B to the identical data value as SUB METAL-C-A.
(27) Eject the alignment tape CR5-1B/CR5-1B PS.
(28) To exit A34 : DM VR 3, push the MENU button once.

OXIDE C adjustment [to step (41)]

(29) Insert the alignment tape CR5-2A or CR5-2A PS. (STANDBY OFF mode)
(DNW-A22: CR5-2A, DNW-A22P: CR5-2A PS)
(30) Connect the output of network analyzer to TP303/DM-89(B-5). GND: E301/DM-89(B-7)
(31) Connect the oscilloscope's CH-2 to TP304/DM-89(B-5). GND: E302/DM-89(B-5)
(32) OXIDE C, Group delay adjustment
Adjust the delay time at 7 MHz use 3 MHz as the reference to satisfy the specification.
Adjustment point: ⊘RV303/DM-89(B-5) and ⊘RV304/DM-89(B-5)
Specification: A = 70 ±5 ns



DNW-A22



DNW-A22P

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(33) Connect the oscilloscope's CH-2 to TP7/DM-89(C-1). GND: E702/DM-89(D-1)

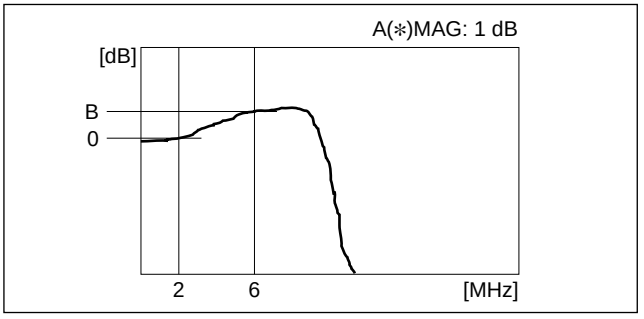
(34) Enter A33 : DM VR 2 of the maintenance mode.

(35) OXIDE C, Main adjustment

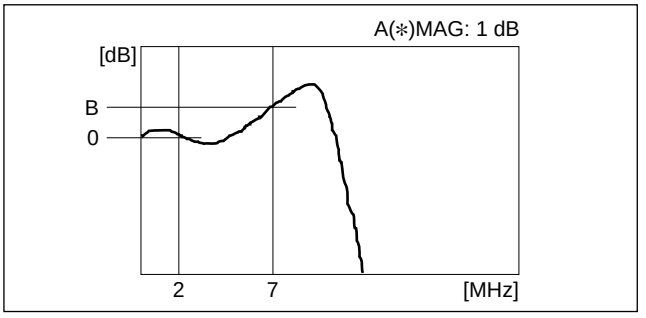
(i) Adjust the level difference at 6 MHz (DNW-A22) or 7 MHz (DNW-A22P) use 2 MHz as the reference to satisfy the specification.

Adjustment point: A33 : DM VR 2 : MAIN OXIDE-C-A

Specification: B = +1.2 ±0.5 dB



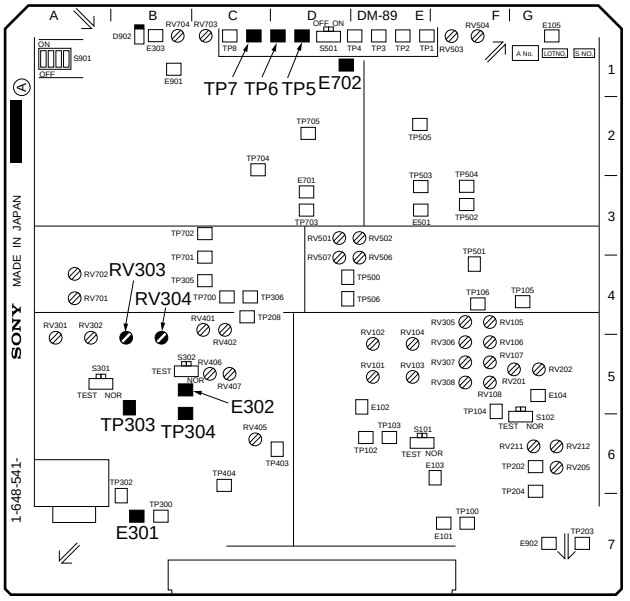
DNW-A22



DNW-A22P

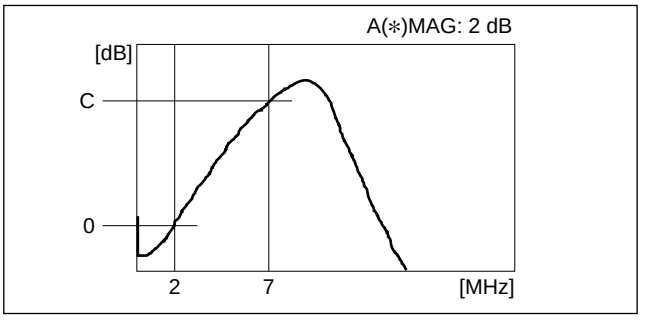
(ii) Set the data value of A33 : DM VR 2 : MAIN OXIDE-C-B to the identical data value as MAIN OXIDE-C-A.

(36) To exit A33 : DM VR 2, push the MENU button once.

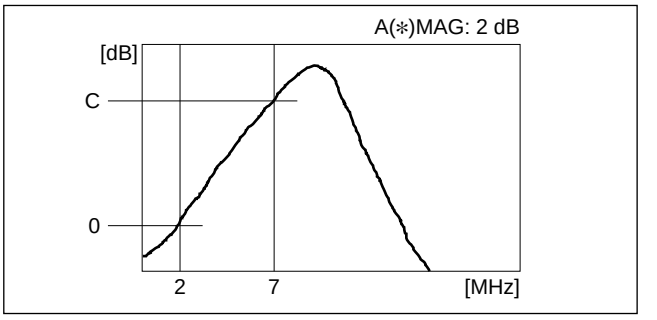


DM-89 Board (A Side)

(37) Enter A34 : DM VR 3 of the maintenance mode.
(38) Connect the oscilloscope's CH-2 to TP6/DM-89(D-1). GND: E702/DM-89(D-1)
(39) OXIDE C, Sub adjustment
  (i) Adjust the level difference at 7 MHz use 2 MHz as the reference to satisfy the specification.
  Adjustment point: A34 : DM VR 3 : SUB OXIDE-C-A
  Specification: C = +11.0 ±0.5 dB

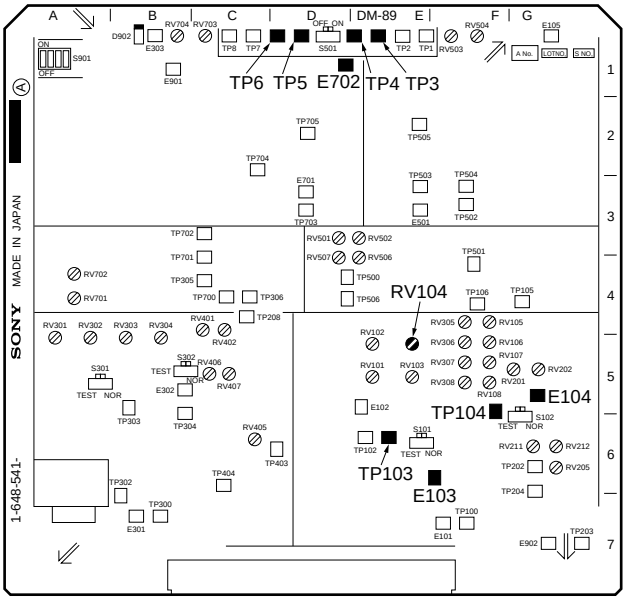


DNW-A22



DNW-A22P

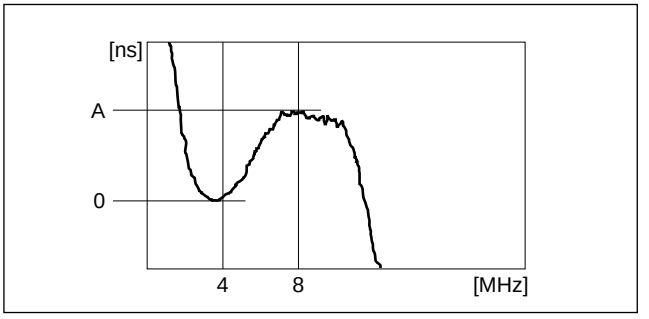
  (ii) Set the data value of A34 : DM VR 3 : SUB OXIDE-C-B to the identical data value as SUB OXIDE-C-A.
(40) To exit A34 : DM VR 3, push the MENU button once.
(41) Disconnect the shorting clip from TP5/DM-89(D-1).



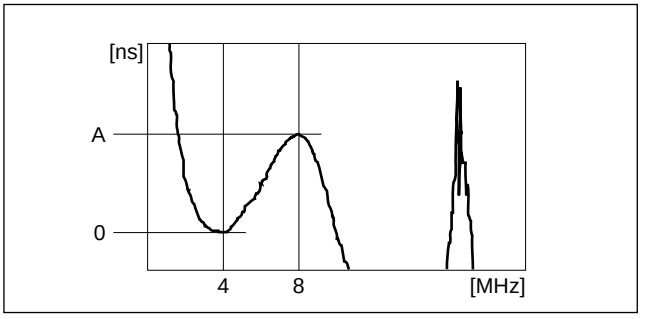
DM-89 Board (A Side)

OXIDE Y adjustment [to step (55)]

(42) Short-circuits TP4/DM-89(E-1) and E702/DM-89(D-1) with a shorting clip.
(43) Connect the output of network analyzer to TP103/DM-89(E-6). GND: E103/DM-89(F-6)
(44) Connect the oscilloscope's CH-2 to TP104/DM-89(F-5). GND: E104/DM-89(G-5)
(45) OXIDE Y, Group delay adjustment
Adjust the delay time at 8 MHz use 4 MHz as the reference to satisfy the specification.
Adjustment point: ⊘RV104/DM-89(E-5)
Specification: DNW-A22: A = 40 ±5 ns
DNW-A22P: A = 40 ±3 ns

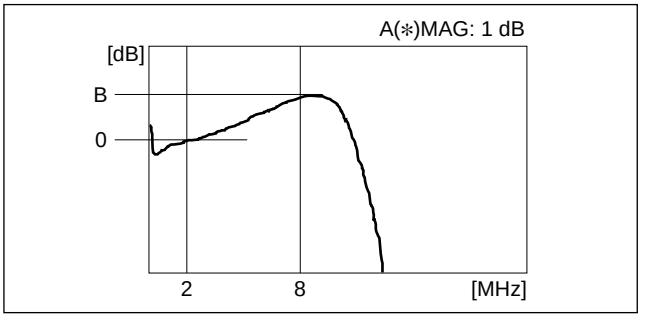


DNW-A22

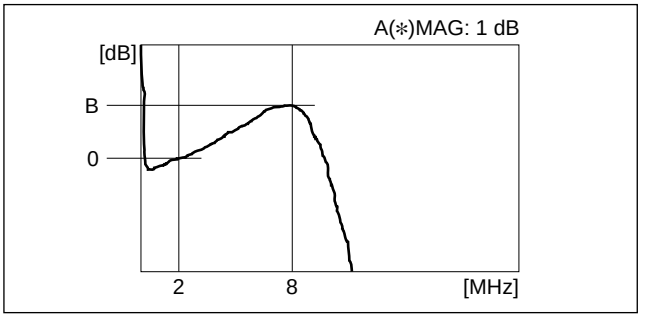


DNW-A22P

(46) Enter A33 : DM VR 2 of the maintenance mode.
(47) Connect the oscilloscope's CH-2 to TP3/DM-89(E-1). GND: E702/DM-89(D-1)
(48) OXIDE Y, Main adjustment
(i) Adjust the level difference at 8 MHz use 2 MHz as the reference to satisfy the specification.
Adjustment point: A33 : DM VR 2 : MAIN OXIDE-Y-A
Specification: DNW-A22: B = +2.0 ±0.5 dB
DNW-A22P: B = +2.5 ±0.5 dB



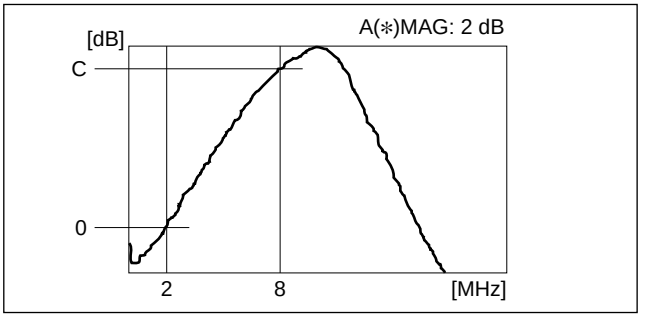
DNW-A22



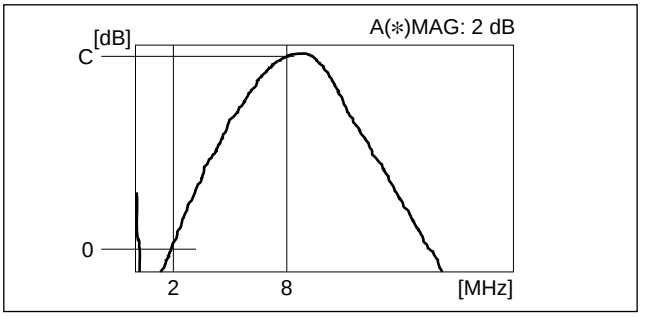
DNW-A22P

(ii) Set the data value of A33 : DM VR 2 : MAIN OXIDE-Y-B to the identical data value as MAIN OXIDE-Y-A.
(49) To exit A33 : DM VR 2, push the MENU button once.

(50) Enter A34 : DM VR 3 of the maintenance mode.
(51) Connect the oscilloscope's CH-2 to TP2/DM-89(E-1). GND: E702/DM-89(D-1)
(52) OXIDE Y, Sub adjustment
  (i) Adjust the level difference at 8 MHz use 2 MHz as the reference to satisfy the specification.
  Adjustment point: A34 : DM VR 3 : SUB OXIDE-Y-A
  Specification: DNW-A22: C = +14.0 ±0.5 dB
  DNW-A22P: C = +17.0 ±0.5 dB



DNW-A22



DNW-A22P

  (ii) Set the data value of A34 : DM VR 3 : SUB OXIDE-Y-B to the identical data value as SUB OXIDE-Y-A.
(53) Eject the alignment tape CR5-2A/CR5-2A PS.
(54) To exit A34 : DM VR 3, push the MENU button once.
(55) Disconnect the short clip from TP4/DM-89(E-1) and E702/DM-89(D-1).
(56) Reset S101/DM-89(E-6) and S301/DM-89(A-5) to NOR (right) side.
(57) Reset No.1 and No.3 of S901/DM-89(A-1) to OFF (down side).

Setting of the OMC DC offset [to step (60)]

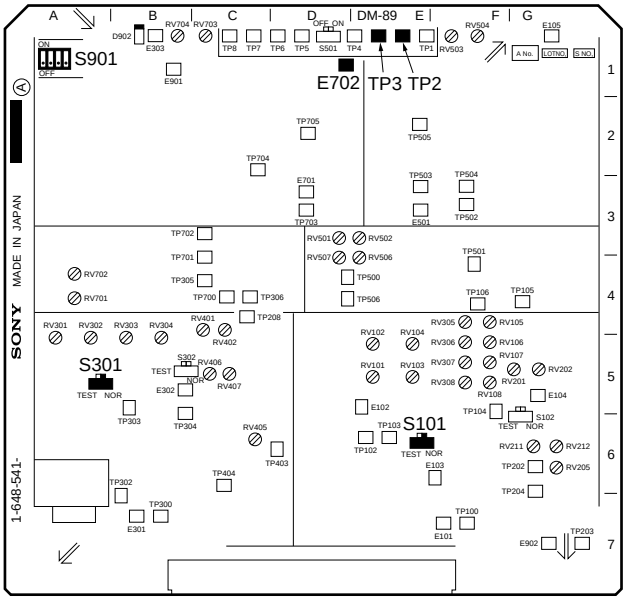
(58) Enter A35 : DM VR 4 of the maintenance mode.
(59) Confirm the setting data of following items of A35 : DM VR 4.

Item of A35 : DM VR 4	Setting data
OMC DC METAL-Y	E4
OMC DC METAL-C	D0
OMC DC OXIDE-Y	D0
OMC DC OXIDE-C	D0

(60) To exit A35 : DM VR 4, push the MENU button once.

Data save [to step (63)]

(61) Enter A3F : NV-RAM CONTROL of the maintenance mode, then execute "SAVE ALL ADJUST DATA".
(62) Check that the message "Save Complete" is displayed on the video monitor.
(63) To exit A3F : NV-RAM CONTROL, push the MENU button once.



DM-89 Board (A Side)

4. Cosine Equalizer Provisional Adjustment

Notes

- This provisional adjustment explains how to adjust without using the network analyzer. When performed "3. Cosine Equalizer Adjustment" using the network analyzer, this provisional adjustment is not necessary to perform.
- Do not perform this provisional adjustment except an urgent maintenance and the network analyzer is not available. If this provisional adjustment is done, it is recommended to perform "3. Cosine Equalizer Adjustment" using the network analyzer later.

(1) Enter A33 : DM VR 2 of the maintenance mode.
(2) Confirm the setting data of all items of A33 : DM VR 2.

Item of A33 : DM VR 2	Setting data for DNW-A22	Setting data for DNW-A22P
MAIN METAL-Y-A	CD	B7
MAIN METAL-Y-B	CD	B7
MAIN METAL-C-A	8E	8D
MAIN METAL-C-B	8E	8D
MAIN OXIDE-Y-A	A6	A8
MAIN OXIDE-Y-B	A6	A8
MAIN OXIDE-C-A	9E	9E
MAIN OXIDE-C-B	9E	9E

(3) To exit A33 : DM VR 2, push the MENU button once.
(4) Enter A34 : DM VR 3 of the maintenance mode.
(5) Confirm the setting data of all items of A34 : DM VR 3.

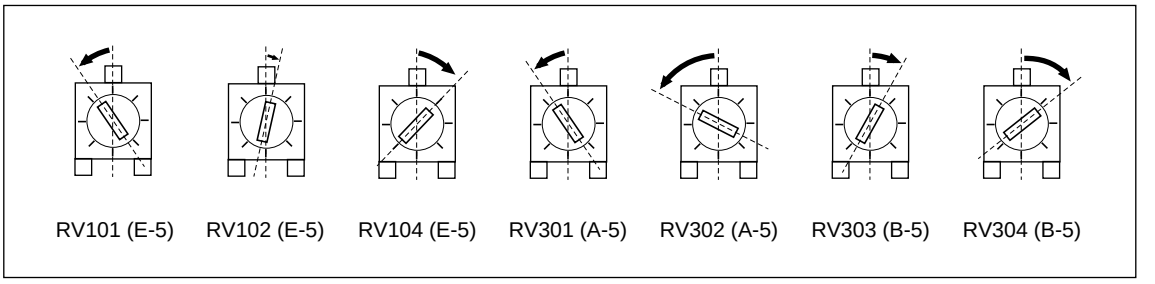
Item of A34 : DM VR 3	Setting data for DNW-A22	Setting data for DNW-A22P
SUB METAL-Y-A	AF	B2
SUB METAL-Y-B	AF	B2
SUB METAL-C-A	70	91
SUB METAL-C-B	70	91
SUB OXIDE-Y-A	B2	BB
SUB OXIDE-Y-B	B2	BB
SUB OXIDE-C-A	A7	A8
SUB OXIDE-C-B	A7	A8

(6) To exit A34 : DM VR 3, push the MENU button once.
(7) Enter A35 : DM VR 4 of the maintenance mode.
(8) Confirm the setting data of following items of A35 : DM VR 4.

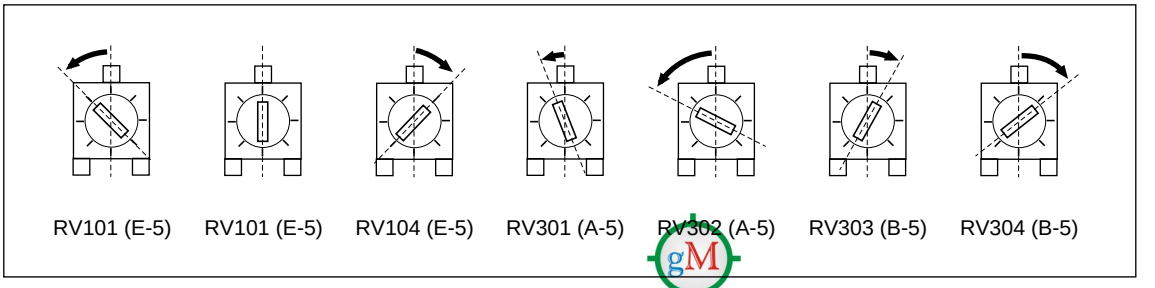
Item of A35 : DM VR 4	Setting data
OMC DC METAL-Y	E4
OMC DC METAL-C	D0
OMC DC OXIDE-Y	D0
OMC DC OXIDE-C	D0

(9) To exit A35 : DM VR 4, push the MENU button once.

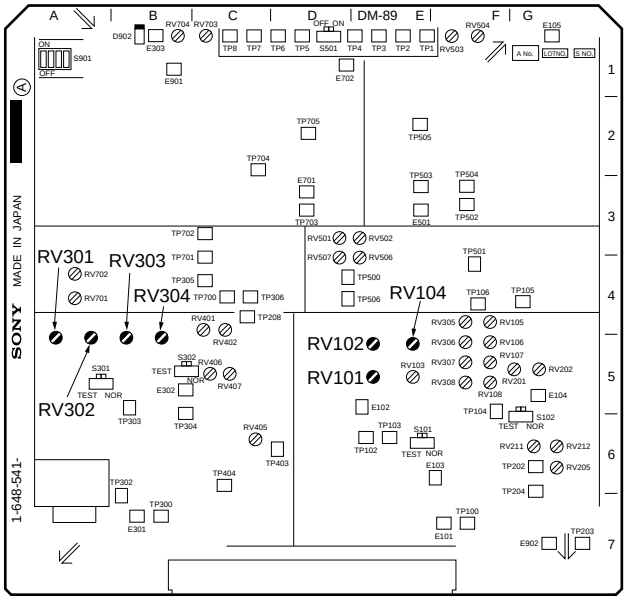
(10) Data save
Enter A3F : NV-RAM CONTROL of the maintenance mode, execute “SAVE ALL ADJUST DATA”.
(11) Check that the message “Save Complete” is displayed on the video monitor.
(12) To exit A3F : NV-RAM CONTROL, push the MENU button once.
(13) Set RVs on DM-89 board to each specified position as shown figure below.



DNW-A22



DNW-A22P



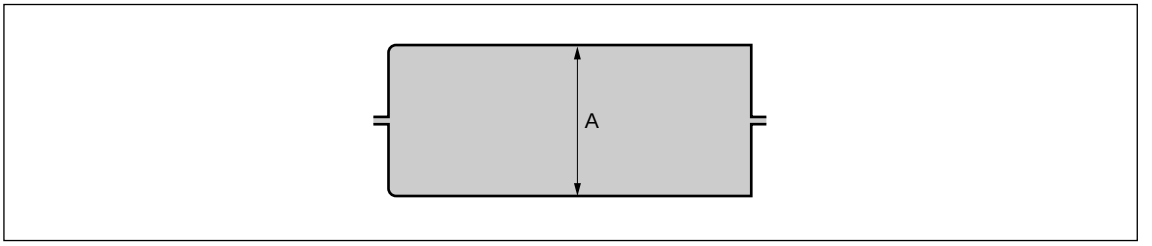
DM-89 Board (A Side)

5. DM RF Output Level Rough Adjustment

Measuring equipment: Oscilloscope (Band width limit: ON)

(1) Connect and set the oscilloscope as follows:
CH-1: TP3/DM-89(E-1), AC 100 mV/DIV, 2 ms/DIV, GND: E702/DM-89(D-1)
CH-2: TP4/DM-89(E-1), DC 1 V/DIV, GND: E702/DM-89(D-1)
Trigger: CH-2, – slope

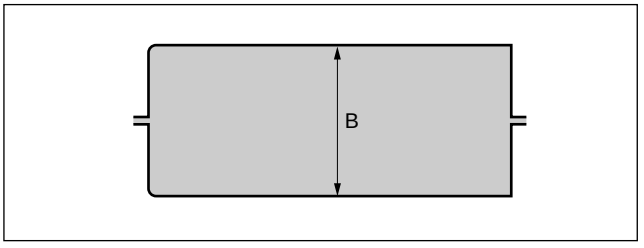
(2) METAL Y adjustment
Playback the flat field signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment. (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)
Adjustment point: ⊘RV211/DM-89(G-6)
Specification: A = 400 ±40 mV p-p



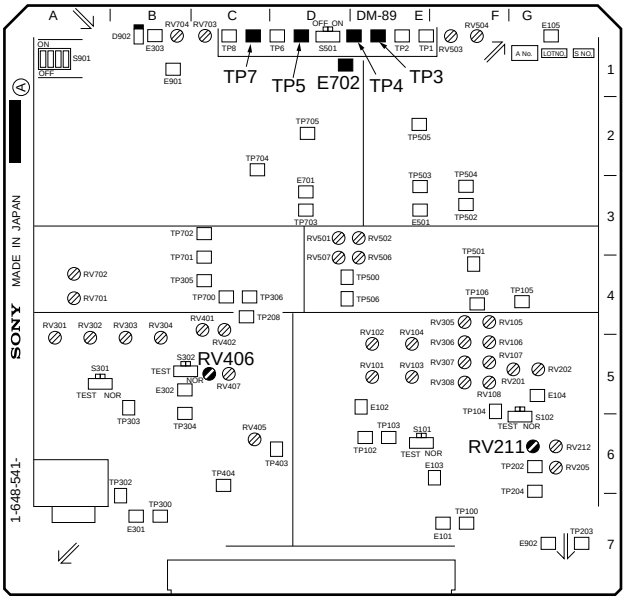
(3) Stop the playback of the alignment tape CR5-1B/CR5-1B PS.

(4) Change the connection of the oscilloscope as follows:
CH-1: TP7/DM-89(C-1), GND: E702/DM-89(D-1)
Trigger: TP5/DM-89(D-1), GND: E702/DM-89(D-1)

(5) METAL C adjustment
Playback the flat field signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment. (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)
Adjustment point: ⊘RV406/DM-89(C-5)
Specification: B = 400 ±40 mV p-p



(6) Eject the alignment tape CR5-1B/CR5-1B PS.



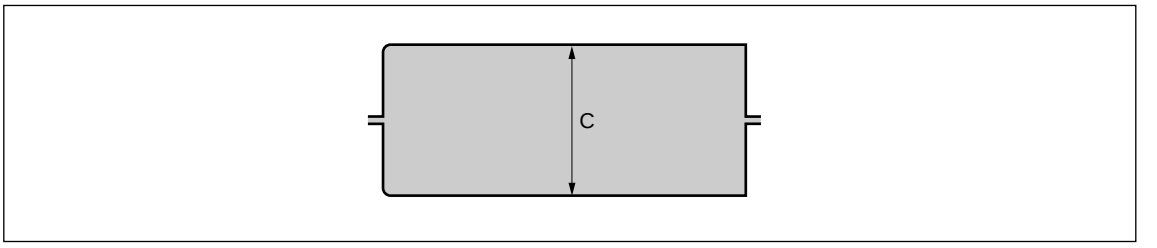
DM-89 Board (A Side)

(7) OXIDE C adjustment

Playback the 75% color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS, and perform the adjustment. (DNW-A22: CR5-2A, DNW-A22P: CR5-2A PS)

Adjustment point: ⊘RV407/DM-89(C-5)

Specification: C = 400 ±40 mV p-p



(8) Stop the playback of the alignment tape CR5-2A/CR5-2A PS.

(9) Change the connection of the oscilloscope as follows:

CH-1: TP3/DM-89(E-1), GND: E702/DM-89(D-1)

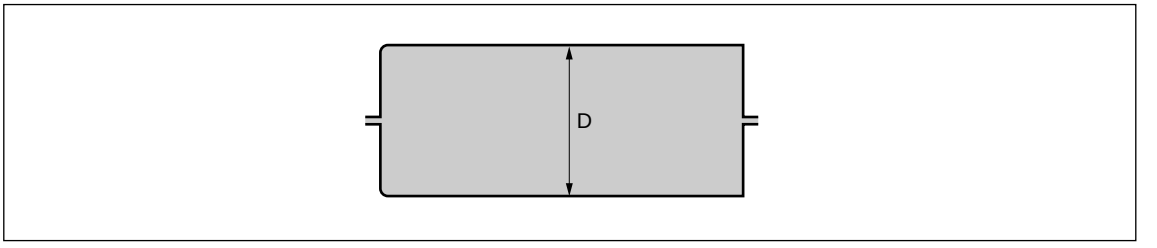
Trigger: TP4/DM-89(E-1), GND: E702/DM-89(D-1)

(10) OXIDE Y adjustment

Playback the 75% color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS, and perform the adjustment. (DNW-A22: CR5-2A, DNW-A22P: CR5-2A PS)

Adjustment point: ⊘RV212/DM-89(G-6)

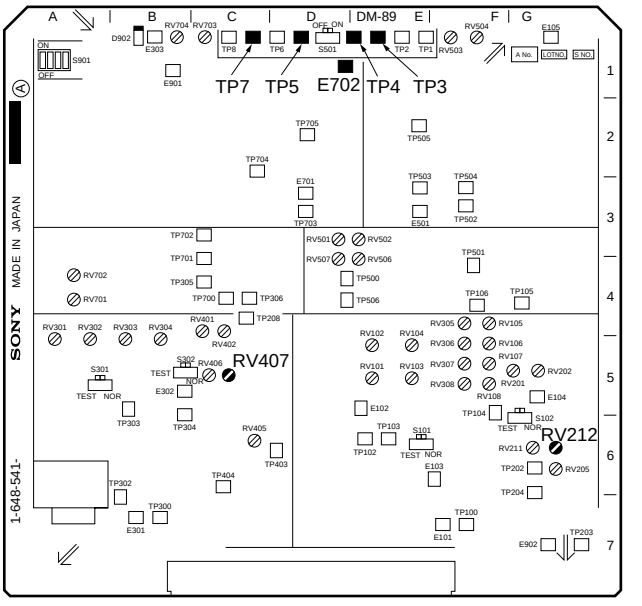
Specification: D = 400 ±40 mV p-p



(11) Stop the playback of the alignment tape CR5-2A/ CR5-2A PS or eject it.

Note

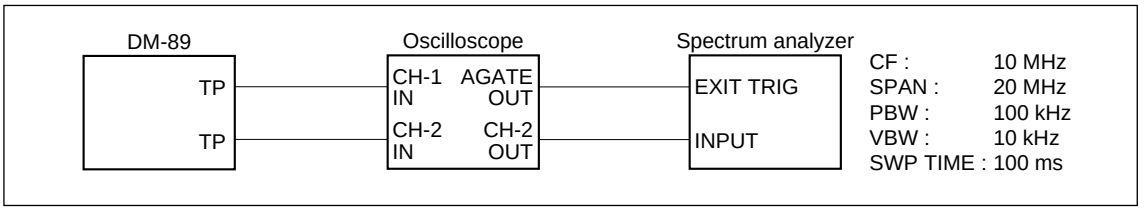
It is not necessary to eject the alignment tape when perform subsequent “6. OMC Carrier Balance Adjustment”.



DM-89 Board (A Side)

6. OMC Carrier Balance Adjustment

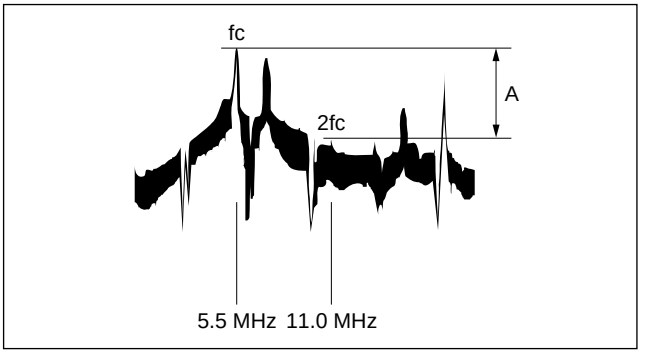
Measuring equipments: Spectrum analyzer and Oscilloscope (Refer to next figure.)



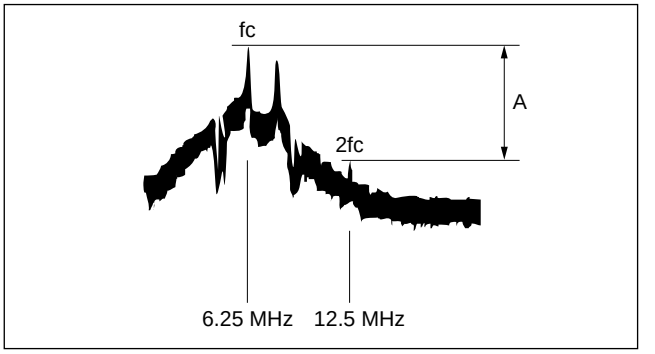
Connection and Setting of Spectrum Analyzer

(1) Connect and set the oscilloscope as follows:
CH-1: TP105/DM-89(G-4), AC 1 V/DIV, 5 ms/DIV, GND: E105/DM-89(G-1)
CH-2: TP4/DM-89(E-1), DC 1 V/DIV, GND: E702/DM-89(D-1)
Trigger: CH-2, – slope

(2) OXIDE Y adjustment
Playback the pulse and bar signal portion (9:00 to 11:00) of the alignment tape CR5-2A or CR5-2A PS, and perform the adjustment. (DNW-A22: CR5-2A, DNW-A22P: CR5-2A PS)
Adjustment point: ⊘RV107/DM-89(F-5) and ⊘RV108/DM-89(F-5)
Specification: A ≧ 35 dB

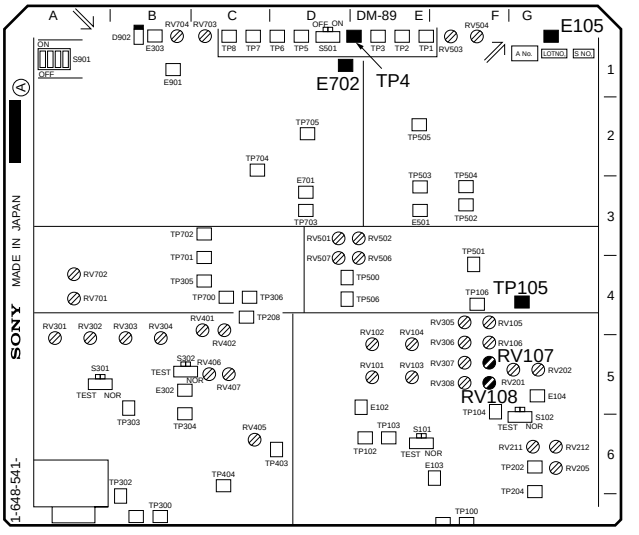


DNW-A22



DNW-A22P

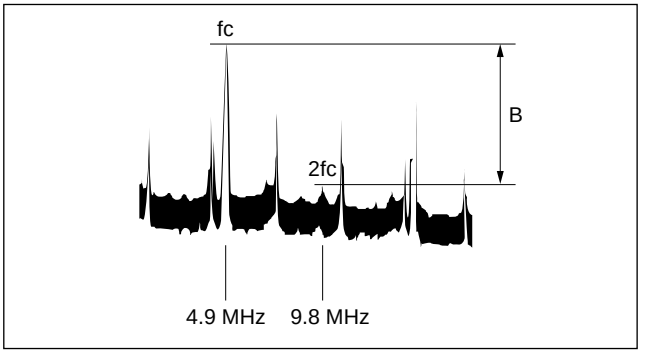
(3) Stop the playback of the alignment tape CR5-2A/CR5-2A PS.



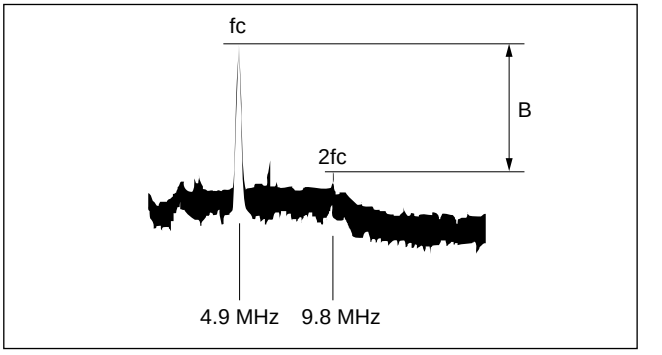
DM-89 Board (A Side)

(4) Change the connection of the oscilloscope as follows:
CH-1: TP305/DM-89(C-4), GND: E303/DM-89(B-1)
CH-2: TP5/DM-89(D-1), GND: E702/DM-89(D-1)

(5) OXIDE C adjustment
Playback the pulse and bar signal portion (9:00 to 11:00) of the alignment tape CR5-2A or CR5-2A PS, and perform the adjustment. (DNW-A22: CR5-2A, DNW-A22P: CR5-2A PS)
Adjustment point: ⊘RV307/DM-89(F-5) and ⊘RV308/DM-89(F-5)
Specification: B ≧ 35 dB



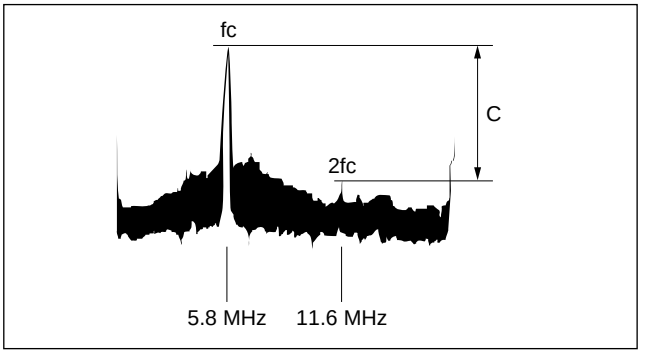
DNW-A22



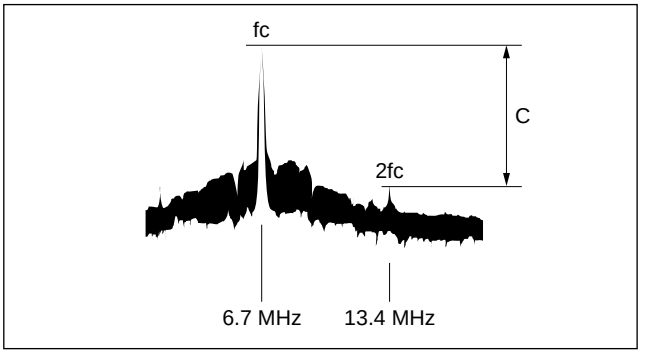
DNW-A22P

(6) Eject the alignment tape CR5-2A/CR5-2A PS.

(7) METAL C adjustment
Playback the flat field signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment. (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)
Adjustment point: ⊘RV305/DM-89(F-4) and ⊘RV306/DM-89(F-5)
Specification: C ≧ 40 dB



DNW-A22



DNW-A22P

(8) Stop the playback of the alignment tape CR5-1B/CR5-1B PS.

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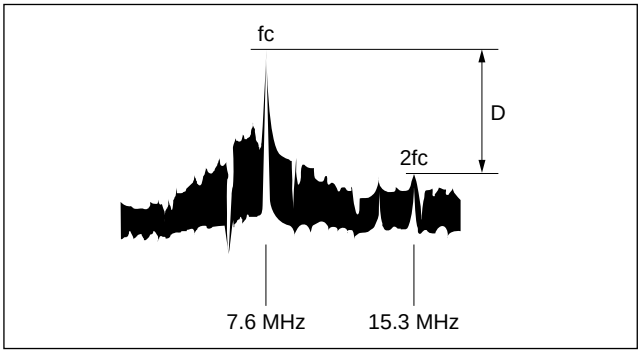
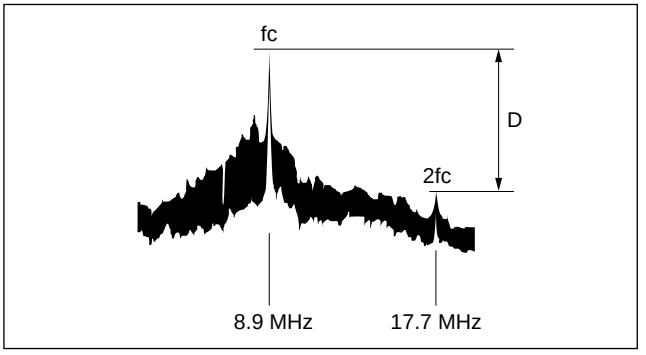
(9) Change the connection of the oscilloscope as follows:
CH-1: TP105/DM-89(E-1), GND: E105/DM-89(G-1)
CH-2: TP4/DM-89(E-1), GND: E702/DM-89(D-1)

(10) METAL Y adjustment
Playback the flat filed signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment. (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)
Adjustment point: ⊘RV105/DM-89(F-4) and ⊘RV106/DM-89(F-5)
Specification: D ≧ 40 dB



DNW-A22

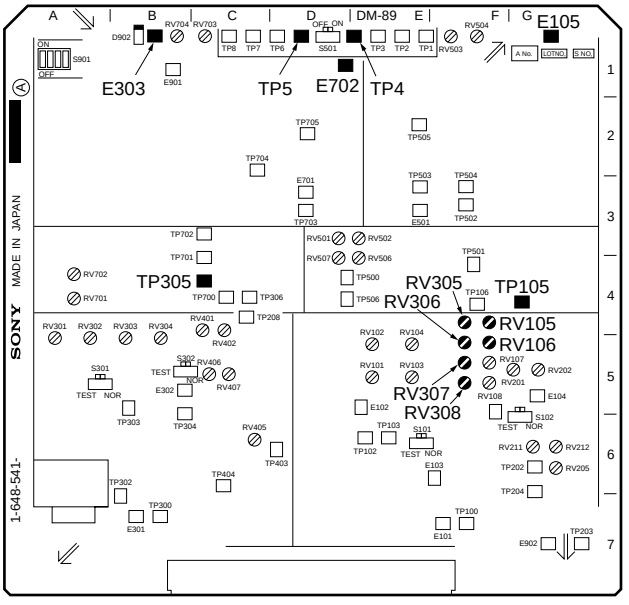


DNW-A22P

(11) Stop the playback of the alignment tape CR5-1B/CR5-1B PS or eject it.

Note

It is not necessary to eject the alignment tape when perform subsequent “8. Demodulator Limiter Balance Adjustment”.



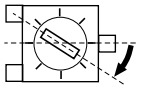
DM-89 Board (A Side)

7. OMC Carrier Balance Provisional Adjustment

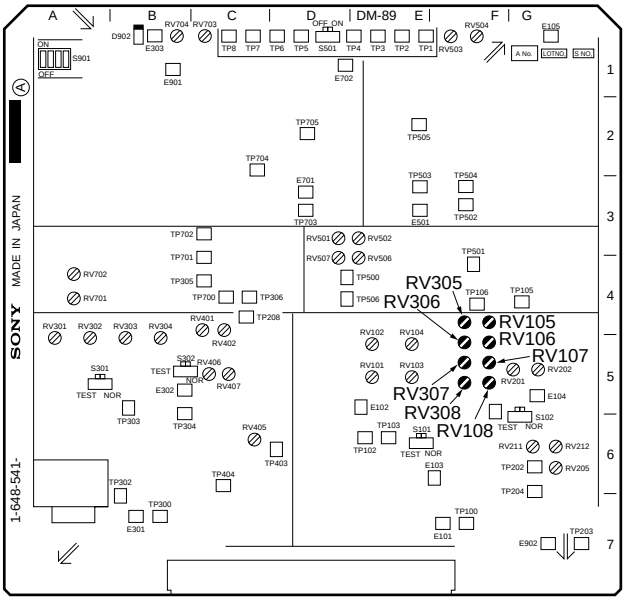
Notes

- This provisional adjustment explains how to adjust without using the spectrum analyzer. When performed “6. OMC Carrier Balance Adjustment” using the spectrum analyzer, this provisional adjustment is not necessary to perform.
- Do not perform this provisional adjustment except an urgent maintenance and the spectrum analyzer is not available. If this provisional adjustment is done, it is recommended to perform “6. OMC Carrier Balance Adjustment” using the spectrum analyzer later.

Set RVs on DM-89 board to each specified position as show below.



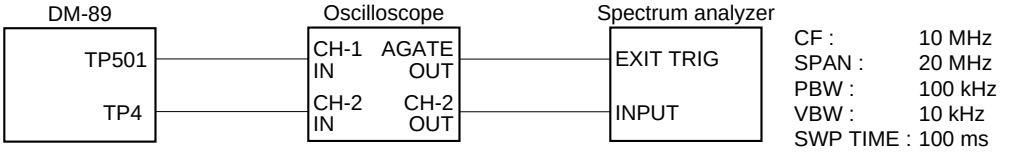
RV105 (F-4)
RV106 (F-5)
RV107 (F-5)
RV108 (F-5)
RV305 (F-4)
RV306 (F-5)
RV307 (F-5)
RV308 (F-5)



DM-89 Board (A Side)

8. Demodulator Limiter Balance Adjustment

Measuring equipment: Spectrum analyzer and Oscilloscope (Refer to next figure.)

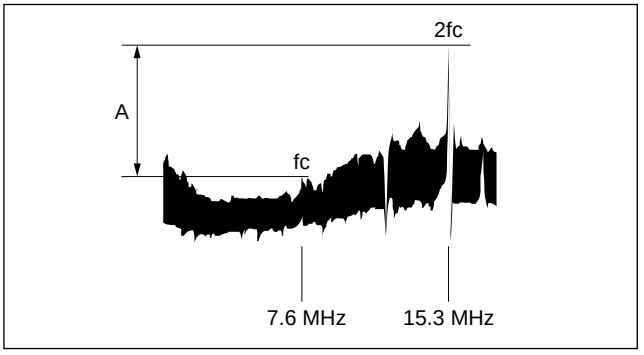


Connection and Setting of Spectrum Analyzer

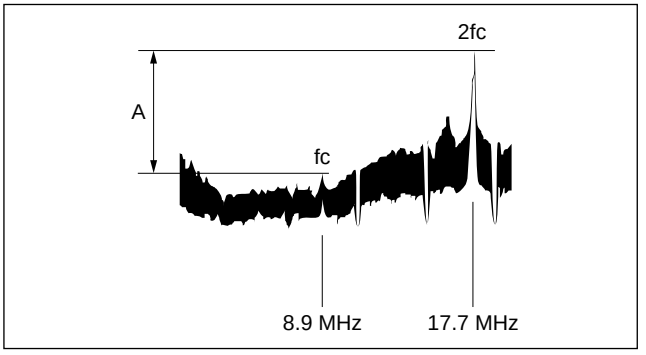
Y adjustment (using the spectrum analyzer)

(1) Connect and set the oscilloscope as follows:
CH-1: TP501/DM-89(F-4), AC 1 V/DIV, 5 ms/DIV, GND: E501/DM-89(E-3)
CH-2: TP4/DM-89(E-1), DC 1 V/DIV, GND: E702/DM-89(D-1)
Trigger: CH-2, – slope

(2) Playback the flat filed signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment. (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)
Adjustment point: ⊘RV502/DM-89(E-3)
Specification: Maximize the level difference A. (Minimize the fc.)



DNW-A22



DNW-A22P

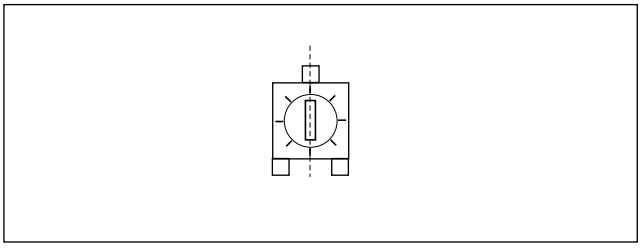
(3) Stop the playback of the alignment tape CR5-1B/CR5-1B PS.

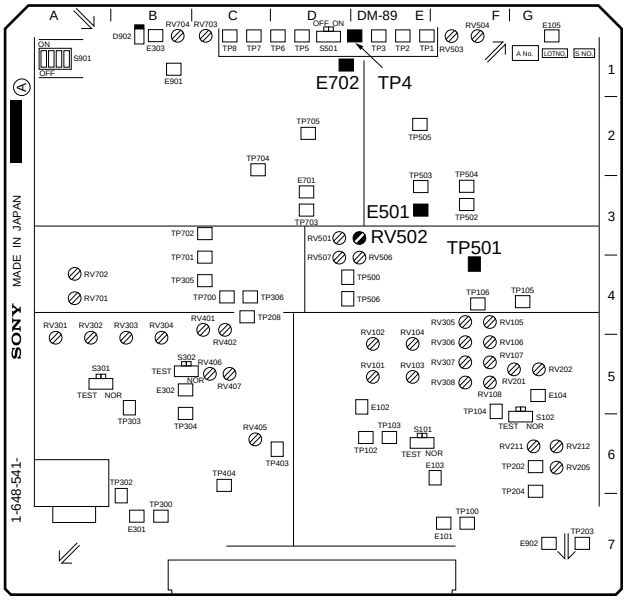
Y provisional adjustment (without using the spectrum analyzer)

Notes

- This provisional adjustment explains how to adjust without using the spectrum analyzer. When performed the above adjustment using the spectrum analyzer, this provisional adjustment is not necessary to perform.
- Do not perform this provisional adjustment except an urgent maintenance and the spectrum analyzer is not available. If this provisional adjustment is done, it is recommended to perform the above adjustment using the spectrum analyzer later.

Set RV502/DM-89 (E-3) as show below.



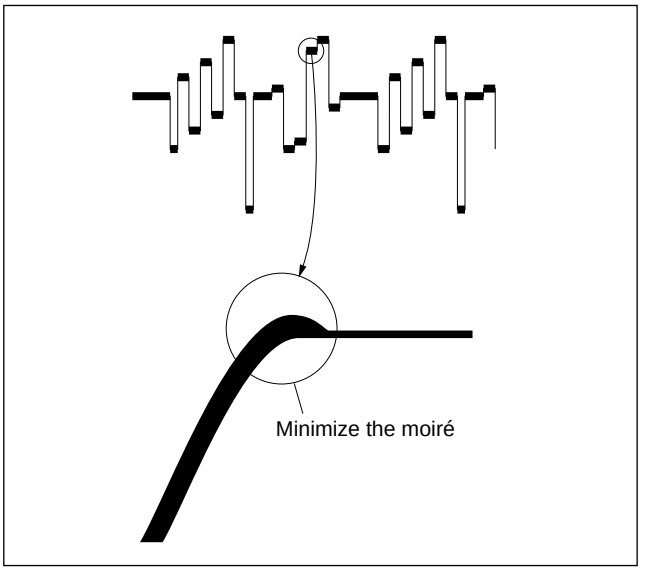


DM-89 Board (A Side)

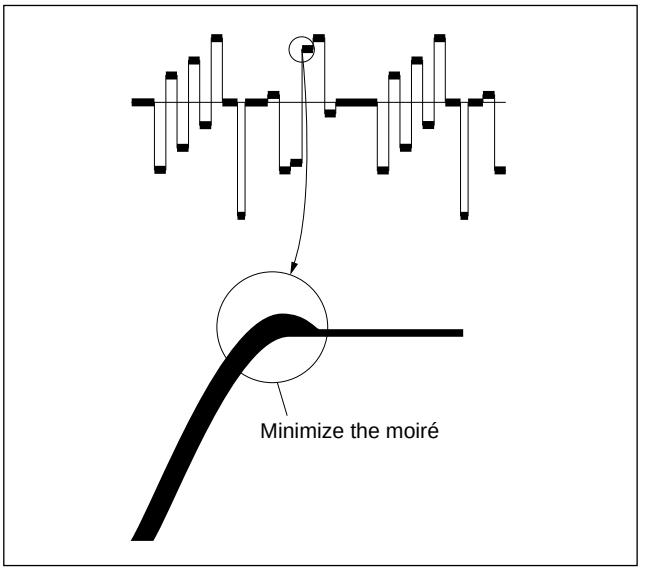
C adjustment

(4) Connect and set the oscilloscope as follows:
CH-1: TP8/DM-89(C-1), AC 200 mV/DIV, 10 µs/DIV, GND: E702/DM-89(D-1)

(5) Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment. (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)
Adjustment point: ⊘RV702/DM-89(A-4)
Specification: Minimize the moiré of specified part.



DNW-A22

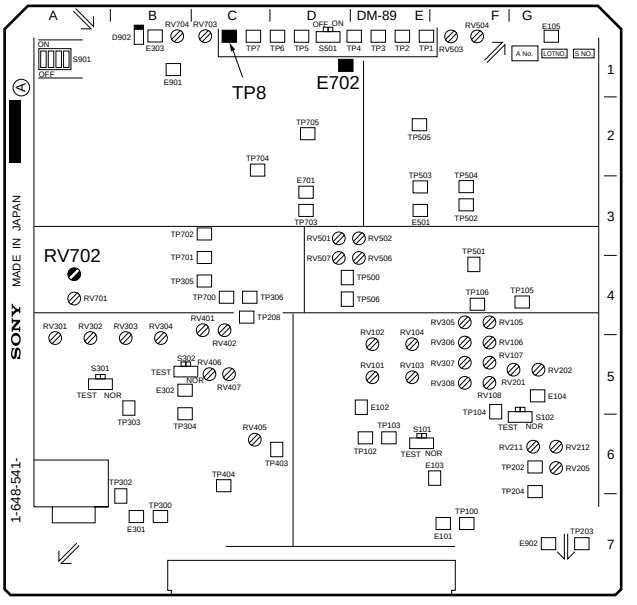


DNW-A22P

(6) Stop the playback of the alignment tape CR5-1B/CR5-1B PS or eject it.

Note

It is not necessary to eject the alignment tape when perform subsequent “9. Non-liner Output Level Adjustment”.



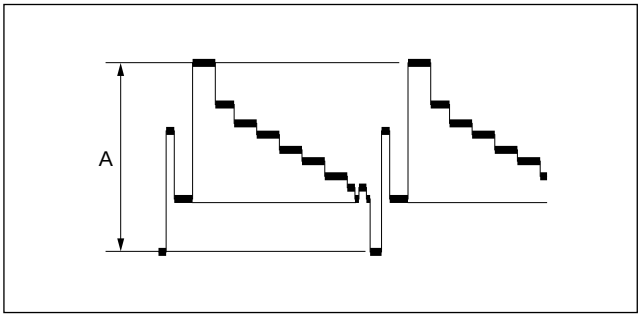
DM-89 Board (A Side)

9. Non-liner Output Level Adjustment

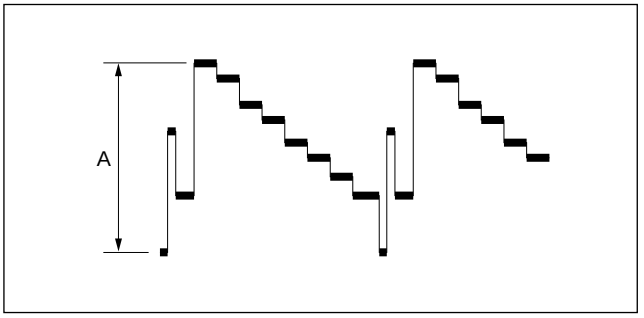
Measuring equipment: Oscilloscope

(1) Connect and set the oscilloscope as follows:
CH-1: TP505/DM-89(E-2), AC 200 mV/DIV, 10 µs/DIV, GND: E501/DM-89(E-3)

(2) METAL Y adjustment
Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment. (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)
Adjustment point: ⊘RV503/DM-89(F-1)
Specification: A = 1.00 ±0.01 V

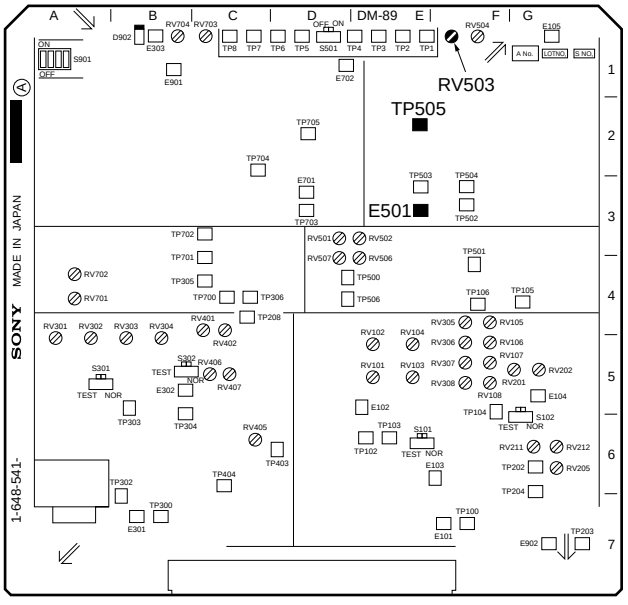


DNW-A22



DNW-A22P

(3) Stop the playback of the alignment tape CR5-1B/CR5-1B PS.

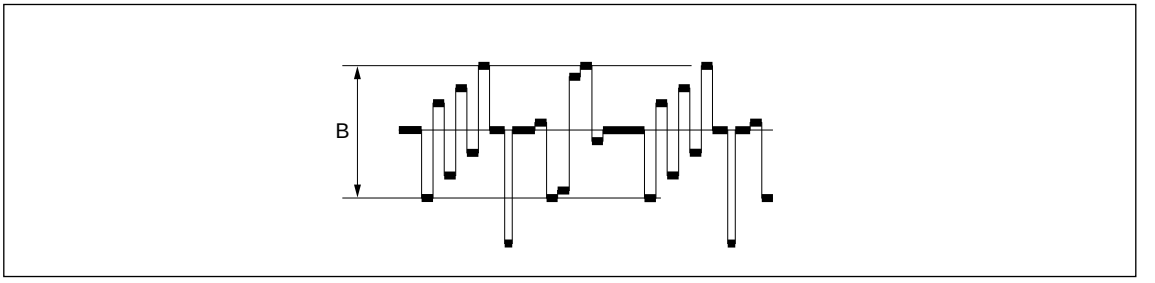


DM-89 Board (A Side)

(4) Change the connection of the oscilloscope as follows:
CH-1: TP705/DM-89(D-2), GND: E701/DM-89(D-3)

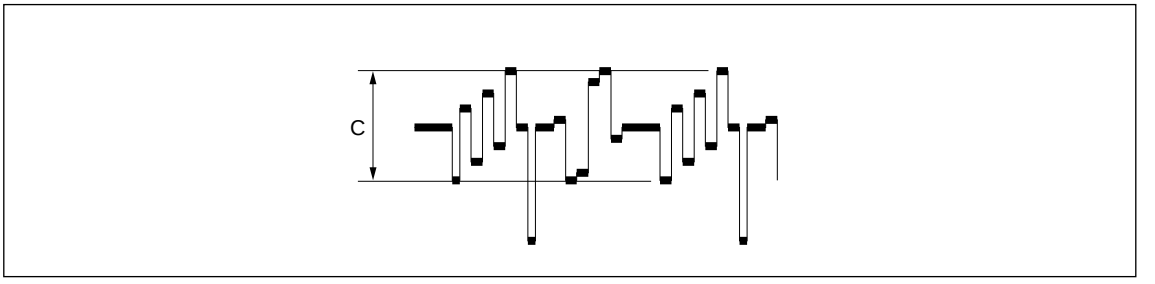
For DNW-A22P only, perform steps (5) and (6).

(5) METAL C adjustment
Playback the 100% color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B PS, and perform the adjustment.
Adjustment point: ⊘RV703/DM-89(C-1)
Specification: B = 933 ±10 mV



(6) Eject the alignment tape CR5-1B PS.

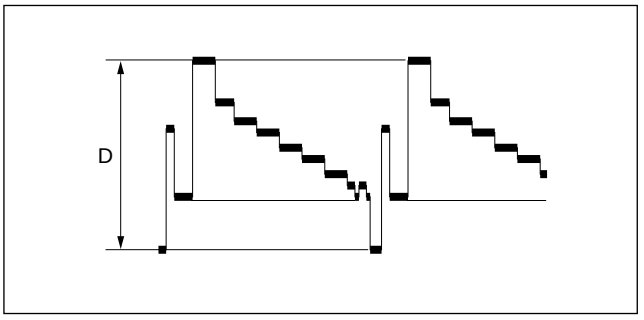
(7) C adjustment for DNW-A22
OXIDE C adjustment for DNW-A22P
Playback the 75% color-bar signal portion of the alignment tape CR5-1B or CR5-2A PS, and perform the adjustment.
[DNW-A22: CR5-1B (14:00 to 17:00), DNW-A22P: CR5-2A PS (0:00 to 3:00)]
Adjustment point: ⊘RV704/DM-89(B-1)
Specification: C = 700 ±10 mV



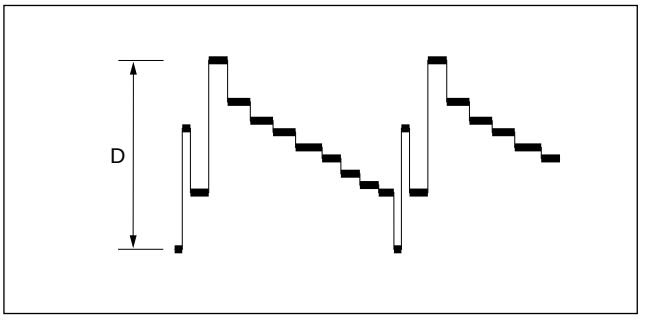
(8) For DNW-A22, eject the alignment tape CR5-1B.
For DNW-A22P, stop the playback of the alignment tape CR5-2A PS.

(9) Change the connection of the oscilloscope as follows:
CH-1: TP505/DM-89(E-2), GND: E501/DM-89(E-3)

(10) OXIDE Y adjustment
Playback the 75% color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS, and perform the adjustment. (DNW-A22: CR5-2A, DNW-A22P: CR5-2A PS)
Adjustment point: ⊘RV504/DM-89(F-1)
Specification: D = 1.00 ±0.01 V

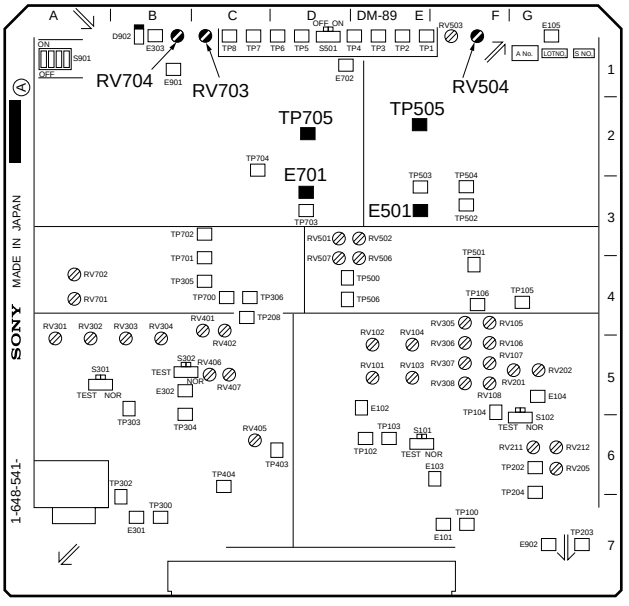


DNW-A22



DNW-A22P

(11) Eject the alignment tape CR5-2A/CR5-2A PS.



DM-89 Board (A Side)

10. PB Frequency Response Adjustment

Measuring equipment: Composite waveform monitor (terminated with 75 Ω)

(1) Set S1-2/TBC-23 (C MUTE) to ON.
(2) Enter A32 : DM VR 1 of the maintenance mode.

METAL Y adjustment [to step (6)]

(3) Observe the video output signal at the composite waveform monitor.
(4) Playback the multiburst signal portion (8:00 to 11:00) of the alignment tape CR5-1B or CR5-1B PS, and adjust that level of specified frequency by table below is satisfy the specification. And check that levels of others are satisfy the specifications.
(DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)

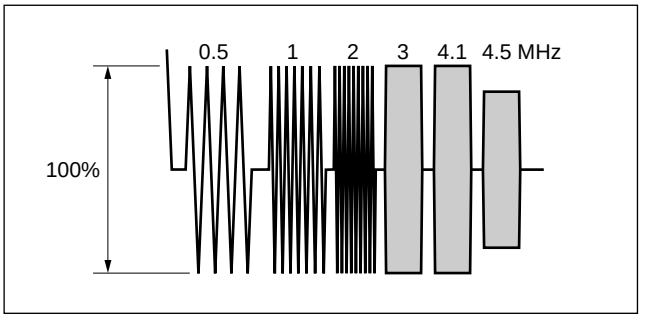
Note

The Y output is overlapped A and B channels on the composite waveform monitor. Adjust A and B channels alternately.

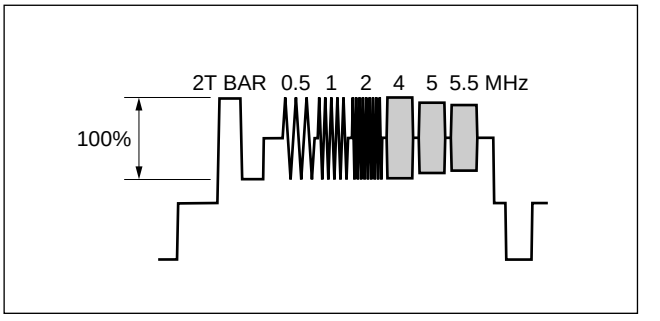
Adjustment points: A channel: A32 : DM VR 1 : EQ1 METAL-Y-A
B channel: A32 : DM VR 1 : EQ1 METAL-Y-B
Specifications (A and B channels): Refer to table below.

Frequency	Specifications for DNW-A22	
0.5 MHz	Reference: 100% {0 dB}	
4.1 MHz	Adjust : 94 (100 to 90)%	{−0.5 $^{+0.5}_{-0.5}$ dB}
1 MHz	Check : 100 (106 to 63)%	{0 $^{+0.5}_{-4.0}$ dB}
2 MHz	Check : 100 (106 to 63)%	{0 $^{+0.5}_{-4.0}$ dB}
3 MHz	Check : 100 (106 to 63)%	{0 $^{+0.5}_{-4.0}$ dB}
4.5 MHz	Check : 80 (106 to 63)%	{−2.0 $^{+2.5}_{-2.0}$ dB}

Frequency	Specifications for DNW-A22P	
2T BAR	Reference: 100% {0 dB}	
5 MHz	Adjust : 100 (96 to 87)%	{−0.8 ±0.4 dB}
0.5 MHz	Check : 100 (106 to 63)%	{0 $^{+0.5}_{-4.0}$ dB}
1 MHz	Check : 100(106 to 63)%	{0 $^{+0.5}_{-4.0}$ dB}
2 MHz	Check : 100 (106 to 63)%	{0 $^{+0.5}_{-4.0}$ dB}
4 MHz	Check : 100 (106 to 63)%	{0 $^{+0.5}_{-4.0}$ dB}
5.5 MHz	Check : 84 (106 to 63)%	{−1.5 $^{+2.0}_{-2.5}$ dB}



DNW-A22



DNW-A22P

(5) Connect the video monitor to VIDEO OUTPUT COMPOSITE 2 connector.
(6) Playback the multiburst signal portion (8:00 to 11:00) of the alignment tape CR5-1B or CR5-1B PS, and check that the playback picture on the video monitor has no flicker.
(DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)

METAL C adjustment [to step (9)]

(7) Observe the R-Y output signal at the osilloscope.

(8) Playback the multiburst signal portion (8:00 to 11:00) of the alignment tape CR5-1B or CR5-1B PS, and adjust that level of specified frequency by table below is satisfy the specification. And check that levels of others are satisfy the specifications.
(DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)

Note

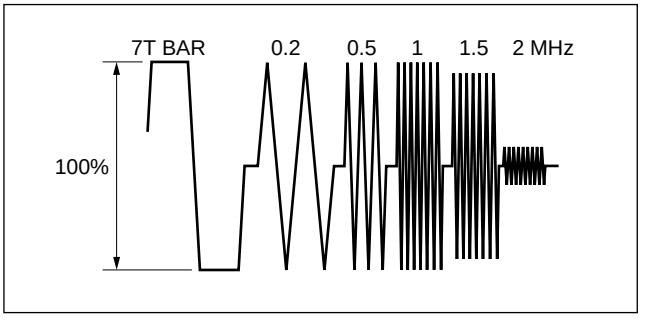
The CTDM signal is displayed on the osilloscope. The timing order of signal is REF SYNC, R-Y, B-Y. And these signals are overlapped A and B channels. Adjust A and B channels alternately.

Adjustment points: A channel: A32 : DM VR 1 : EQ1 METAL-C-A
B channel: A32 : DM VR 1 : EQ1 METAL-C-B

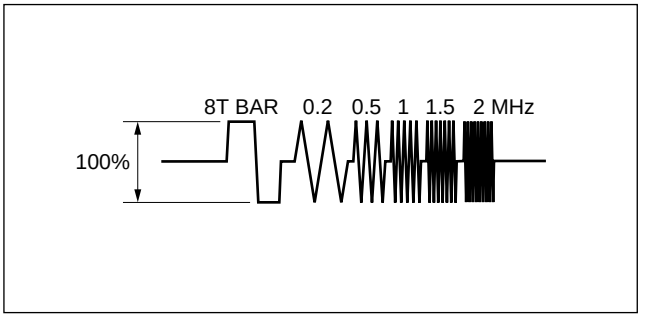
Specifications (A and B channels): Refer to table below.

Frequency	Specification for DNW-A22	
7T BAR	Reference: 100% {0 dB}	
1 MHz	Adjust : 94 (100 to 89)%	{−0.5 ±0.5 dB}
0.2 MHz	Check : 100 (106 to 71)%	{0 $^{+0.5}_{-3.0}$ dB}
0.5 MHz	Check : 100 (106 to 71)%	{0 $^{+0.5}_{-3.0}$ dB}
2 MHz	Check : 80 (106 to 71)%	{−2.0 $^{+2.5}_{-1.0}$ dB}

Frequency	Specifications for DNW-A22P	
8T BAR	Reference: 100% {0 dB}	
1.5 MHz	Adjust : 93 (102 to 85)%	{−0.6 ±0.8 dB}
0.2 MHz	Check : 100 (106 to 71)%	{0 $^{+0.5}_{-3.0}$ dB}
0.5 MHz	Check : 100 (106 to 71)%	{0 $^{+0.5}_{-3.0}$ dB}
1 MHz	Check : 100 (106 to 71)%	{0 $^{+0.5}_{-3.0}$ dB}
2 MHz	Check : 80 (106 to 71)%	{−2.0 $^{+2.5}_{-1.0}$ dB}



DNW-A22



DNW-A22P

(9) If the specifications are not satisfied, perform the fine adjustment so that both frequency response of R-Y and B-Y output signals satisfy the above specifications.

(10) Eject the alignment tape CR5-1B/CR5-1B PS.

OXIDE Y adjustment [to step (13)]

(11) Observe the video output signal at the composite waveform monitor.

(12) Playback the multiburst signal portion (3:00 to 6:00) of the alignment tape CR5-2A or CR5-2A PS, and adjust that level of specified frequency by table below is satisfy the specification. And check that levels of others are satisfy the specifications.
(DNW-A22: CR5-2A, DNW-A22P: CR5-2A PS)

Note

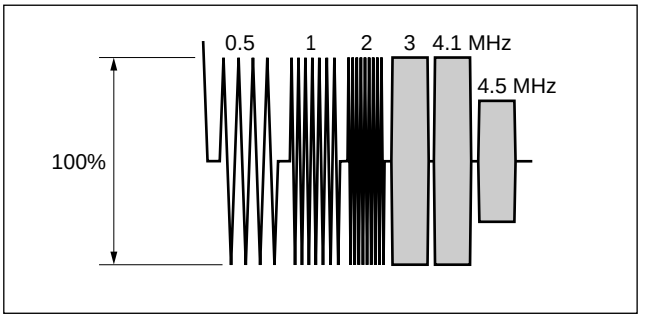
The Y output is overlapped A and B channels on the composite waveform monitor. Adjust A and B channels alternately.

Adjustment point: A channel: A32 : DM VR 1 : EQ1 OXIDE-Y-A
B channel: A32 : DM VR 1 : EQ1 OXIDE-Y-B

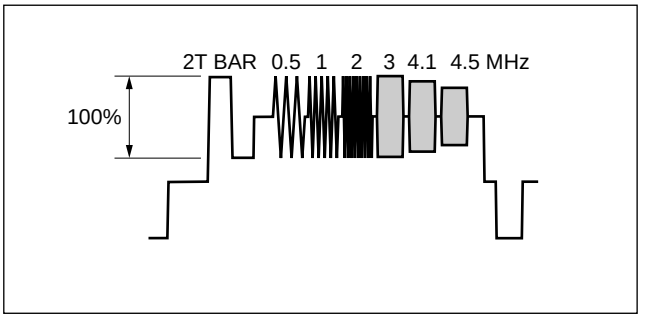
Specifications (A and B channels): Refer to table below.

Frequency	Specifications for DNW-A22	
0.5 MHz	Reference: 100% {0 dB}	
2 MHz	Adjust : 100 (104 to 95)%	{0 $^{+0.3}_{-0.4}$ dB}
1 MHz	Check : 100 (106 to 50)%	{0 $^{+0.5}_{-6.0}$ dB}
3 MHz	Check : 89 (106 to 50)%	{−1.0 $^{+1.5}_{-5.0}$ dB}
4.1 MHz	Check : 71 (106 to 50)%	{−3.0 $^{+3.5}_{-3.0}$ dB}

Frequency	Specifications for DNW-A22P	
2T BAR	Reference: 100% {0 dB}	
3 MHz	Adjust : 89 (100 to 79)%	{−1.0 ±1.0 dB}
0.5 MHz	Check : 100 (106 to 50)%	{0 $^{+0.5}_{-6.0}$ dB}
1 MHz	Check : 100 (106 to 50)%	{0 $^{+0.5}_{-6.0}$ dB}
2 MHz	Check : 100 (106 to 50)%	{0 $^{+0.5}_{-6.0}$ dB}
4.1 MHz	Check : 71 (106 to 50)%	{−3.0 $^{+3.5}_{-3.0}$ dB}



DNW-A22



DNW-A22P

(13) Playback the multiburst signal portion (3:00 to 6:00) of the alignment tape CR5-2A or CR5-2A PS, and confirm that the output level difference of A and B channels is not noticeable in high frequency (at 4.5 MHz).

Note

If the output level difference at 4.5 MHz is noticeable, perform the adjustment of A34 : DM VR 3 : SUB-OXIDE-A or -B. Be sure to adjust for the lower level signal only as following steps ① to ⑤ on a playing back the multiburst signal portion (3:00 to 6:00) of the alignment tape.

① To exit A32 : DM VR 1, push the MENU button once.
② Enter A34 : DM VR 3 of the maintenance mode.
③ Change the data value of SUB-OXIDE-Y-A (A channel side) from B2/BB, and judge a lower level channel. (DNW-A22: B2, DNW-A22P: BB)
④ If the B channel side is lower, return the data value of SUB-OXIDE-Y-A to B2/BB, then adjust (add to the data value) the SUB-OXIDE-Y-B until the 4.5 MHz output level of B channel is equal to the 4.5 MHz output level of A channel.
If the A channel side is lower, adjust (add to the data value) the SUB-OXIDE-Y-A until the 4.5 MHz output level of A channel is equal to the 4.5 MHz output level of B channel.
⑤ To exit A34 : DM VR 3, push the MENU button once.

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OXIDE C adjustment [to step (16)]

(14) Observe the R-Y output signal at the osilloscope.

(15) Playback the multiburst signal portion (3:00 to 6:00) of the alignment tape CR5-2A or CR5-2A PS, and adjust that level of specified frequency by table below is satisfy the specification. And check that levels of others are satisfy the specifications.
(DNW-A22: CR5-2A, DNW-A22P: CR5-2A PS)

Note

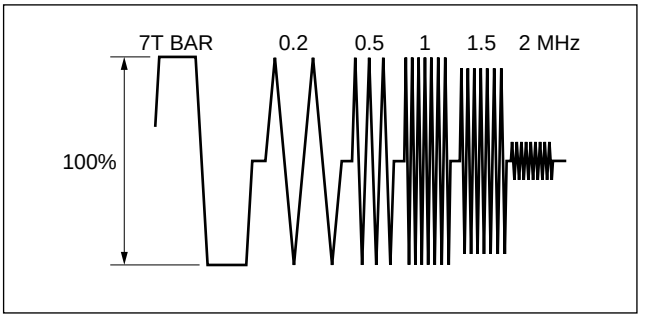
The CTDM signal is displayed on the osilloscope. The timing order of signal is REF SYNC, R-Y, B-Y. And these signals are overlapped A and B channels. Adjust A and B channels alternately.

Adjustment point: A channel: A32 : DM VR 1 : EQ1 OXIDE-C-A
B channel: A32 : DM VR 1 : EQ1 OXIDE-C-B

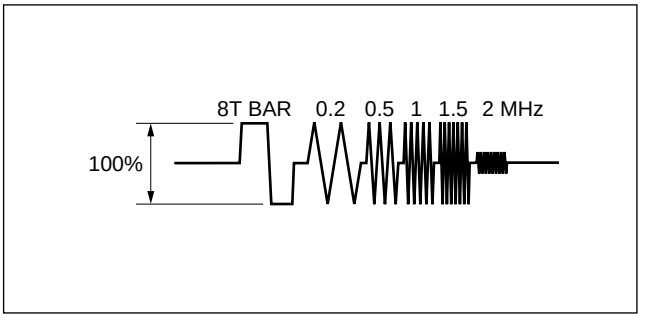
Specifications (A and B channels): Refer to table below.

Frequency	Specification for DNW-A22	
7T BAR	Reference: 100% {0 dB}	
1 MHz	Adjust : 94 (100 to 89)%	{−0.5 ±0.5 dB}
0.2 MHz	Check : 100 (106 to 71)%	{0 $^{+0.5}_{-3.0}$ dB}
0.5 MHz	Check : 95 (106 to 71)%	{−0.4 $^{+0.9}_{-2.6}$ dB}
1.5 MHz	Check : 80 (106 to 71)%	{−2.0 $^{+2.5}_{-1.0}$ dB}

Frequency	Specifications for DNW-A22P	
8T BAR	Reference: 100% {0 dB}	
1 MHz	Adjust : 94 (102 to 86)%	{−0.5 ±0.8 dB}
0.2 MHz	Check : 100 (106 to 71)%	{0 $^{+0.5}_{-3.0}$ dB}
0.5 MHz	Check : 100 (106 to 71)%	{0 $^{+0.5}_{-3.0}$ dB}
1.5 MHz	Check : 84 (106 to 71)%	{−1.5 $^{+2.0}_{-1.5}$ dB}



DNW-A22



DNW-A22P

(16) If the specifications are not satisfied, perform the fine adjustment so that both frequency response of R-Y and B-Y output signals satisfy the above specifications.

(17) Eject the alignment tape CR5-2A/CR5-2A PS.

(18) To exit A32 : DM VR 1, push the MENU button once.

Data save [to step (21)]

(19) Enter A3F : NV-RAM CONTROL of the maintenance mode, execute “SAVE ALL ADJUST DATA”.

(20) Check that the message “Save Complete” is displayed on the video monitor.

(21) To exit A3F : NV-RAM CONTROL, push the MENU button once.

(22) Reset S1-2/TBC-23 (C MUTE) to OFF.

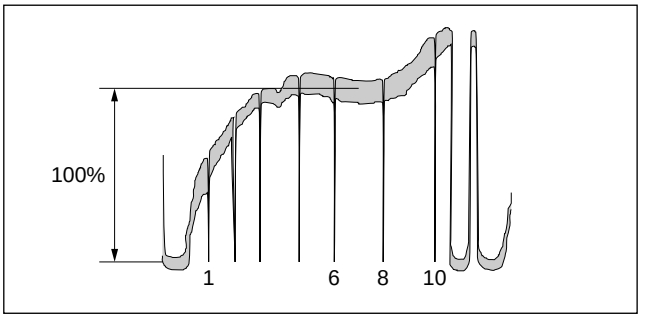
11. Drop-out Compensation Equalizer Adjustment

Measuring equipment: Oscilloscope

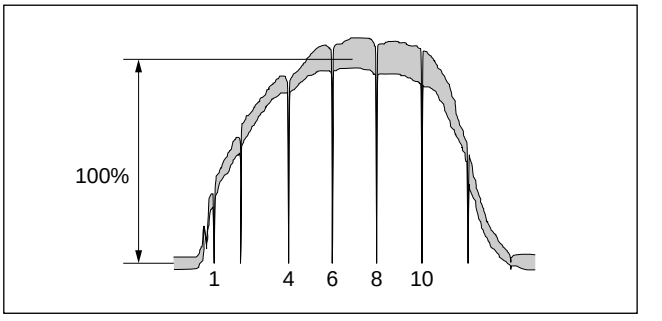
(1) Set S1900-1/SS-63(P-1) to ON (up side).
(2) Connect and set the oscilloscope as follows:
CH-1: TP203/DM-89(G-7), DC >200 mV/DIV, 2 ms/DIV, GND: E902/DM-89(G-7)
CH-2: TP4/DM-89(E-1), DC 1 V/DIV, GND: E702/DM-89(D-1)
Trigger: CH-2, – slope
(3) METAL Y adjustment
Playback the RF sweep signal portion (0:00 to 2:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment. (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)
Adjustment point: ⊘RV201/DM-89(G-5)
Specifications: Refer to table below.

Observation freq.	Specifications for DNW-A22
6 MHz	Reference: 100% {0 dB}
8 MHz	100 ±20 % {0 ±2.0 dB}
10 MHz	120 $^{+50}_{-20}$ % {2.0 $^{+5.0}_{-2.0}$ dB}

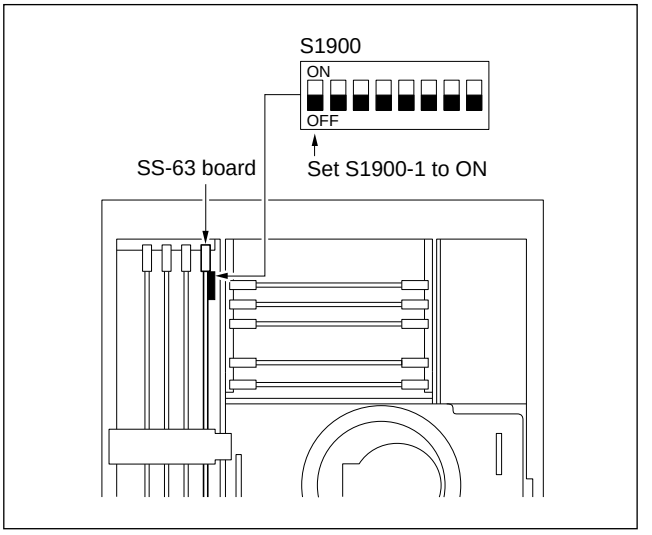
Observation freq.	Specifications for DNW-A22P
6 MHz	Reference: 100% {0 dB}
8 MHz	100 ±20 % {0 ±2.0 dB}
10 MHz	110 $^{+40}$ % {1.0 $^{+5.0}$ dB}



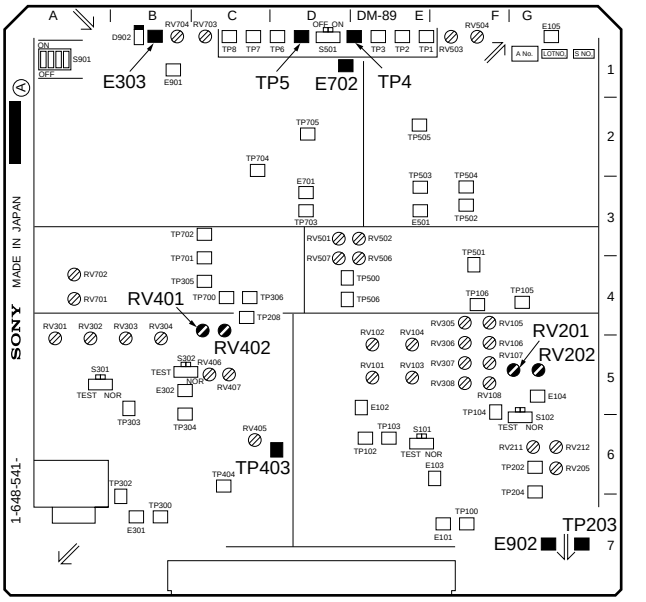
DNW-A22



DNW-A22P



S1900 of SS-63 Board

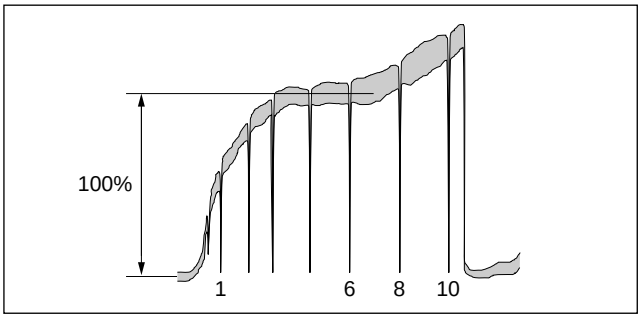


DM-89 Board (A Side)

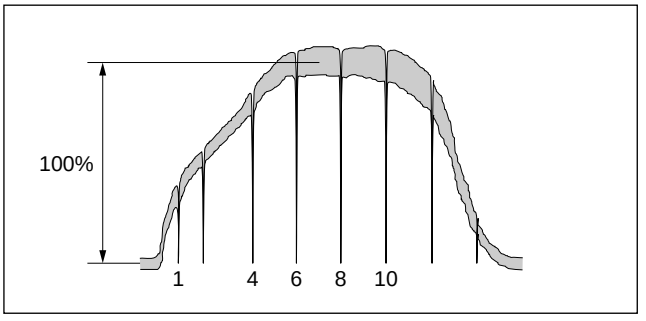
(4) Change the connection of the oscilloscope as follows:
CH-1: TP403/DM-89(D-6), GND: E303/DM-89(B-1)
CH-2: TP5/DM-89(D-1), GND: E702/DM-89(D-1)

(5) METAL C adjustment
Playback the RF sweep signal portion (0:00 to 2:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment. (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)
Adjustment point: ⊘RV401/DM-89(G-4)
Specifications: Refer to table below.

Observation freq.	Specifications
6 MHz	Reference: 100% {0 dB}
8 MHz	100 ±20 % {0 ±2.0 dB}
10 MHz	110 $^{+40}_{-20}$ % {1.0 $^{+5.0}_{-2.0}$ dB}

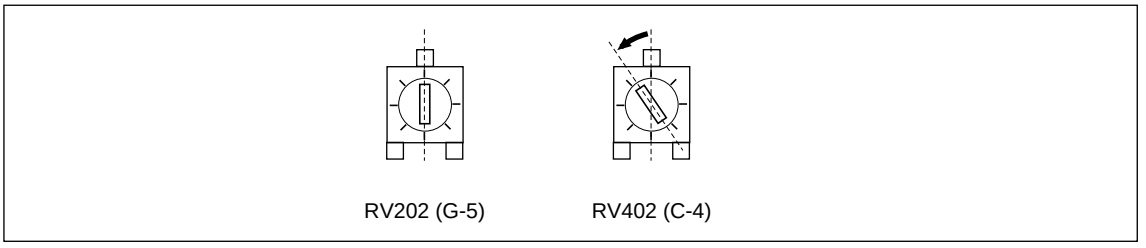


DNW-A22



DNW-A22P

(6) OXIDE Y/C adjustment
Set RVs on DM-89 board to each specified position as show below.



(7) Reset S1900-1/SS-63(P-1) to OFF (down side).

(8) Stop the playback of the alignment tape CR5-1B/CR5-1B PS or eject it.

Note

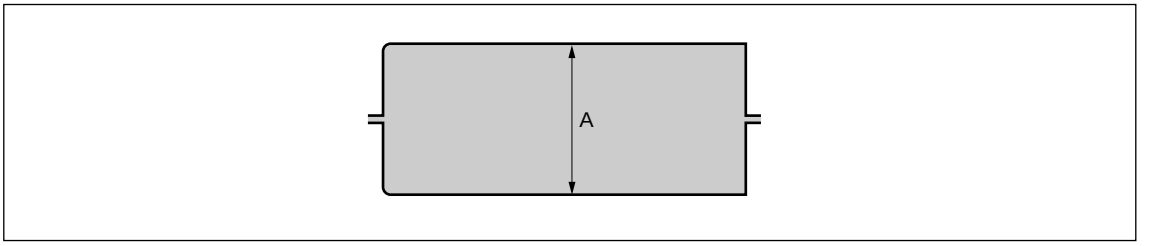
It is not necessary to eject the alignment tape when perform subsequent “12. DM RF Output Level Adjustment”.

12. DM RF Output Level Adjustment

Measuring equipment: Oscilloscope (Band width limit: ON)

(1) Connect and set the oscilloscope as follows:
CH-1: TP3/DM-89(E-1), AC 100 mV/DIV, 2 ms/DIV, GND: E702/DM-89(D-1)
CH-2: TP4/DM-89(E-1), DC 1 V/DIV, GND: E702/DM-89(D-1)
Trigger: CH-2, – slope

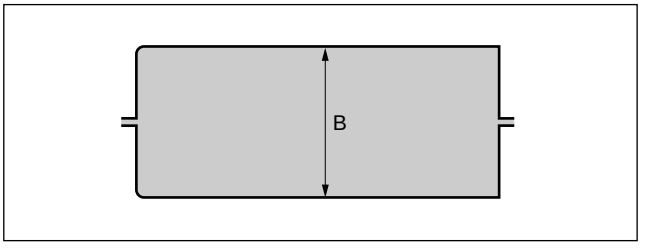
(2) METAL Y adjustment
Playback the flat field signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment. (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)
Adjustment point: ⊘RV211/DM-89(G-6)
Specification: A = 400 ±40 mV p-p



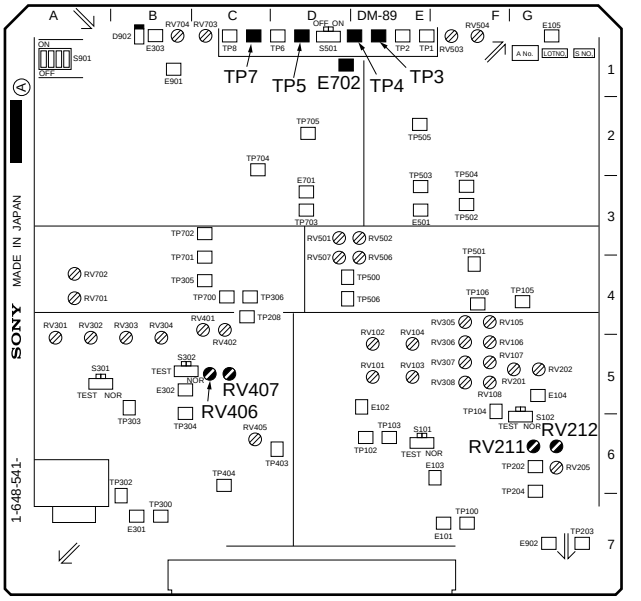
(3) Stop the playback of the alignment tape CR5-1B/CR5-1B PS.

(4) Change the connection of the oscilloscope as follows:
CH-1: TP7/DM-89(C-1), GND: E702/DM-89(D-1)
CH-2: TP5/DM-89(D-1), GND: E702/DM-89(D-1)

(5) METAL C adjustment
Playback the flat filed signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment. (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)
Adjustment point: ⊘RV406/DM-89(C-5)
Specification: B = 400 ±40 mV p-p

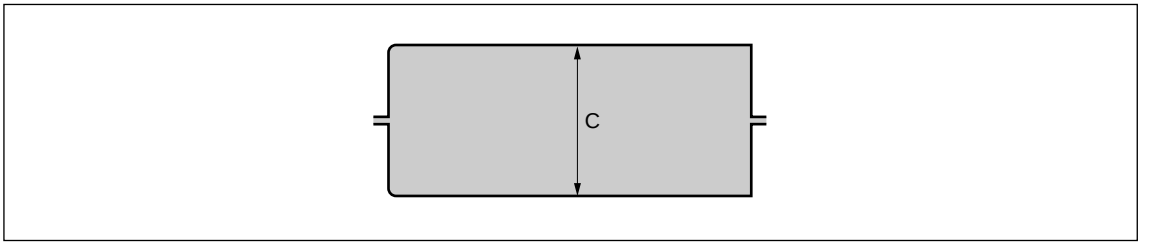


(6) Eject the alignment tape CR5-1B/CR5-1B PS.



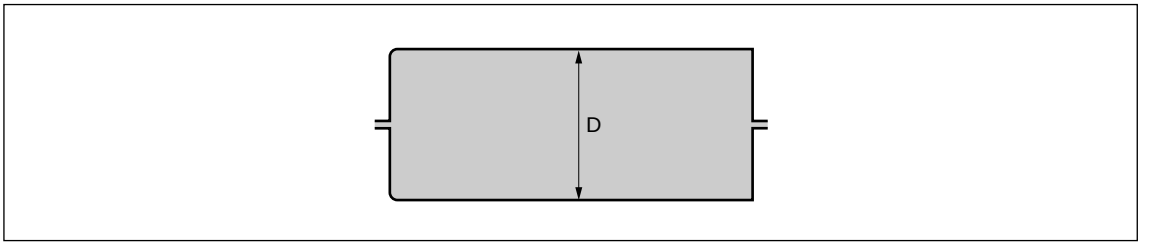
DM-89 Board (A Side)

(7) OXIDE C adjustment
Playback the 75% color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS, and perform the adjustment. (DNW-A22: CR5-2A, DNW-A22P: CR5-2A PS)
Adjustment point: ⊘RV407/DM-89(C-5)
Specification: C = 400 ±40 mV p-p



(8) Change the connection of the oscilloscope as follows:
CH-1: TP3/DM-89(E-1), GND: E702/DM-89(D-1)
CH-2: TP4/DM-89(E-1), GND: E702/DM-89(D-1)

(9) OXIDE Y adjustment
Playback the 75% color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS, and perform the adjustment. (DNW-A22: CR5-2A, DNW-A22P: CR5-2A PS)
Adjustment point: ⊘RV212/DM-89(G-6)
Specification: D = 400 ±40 mV p-p



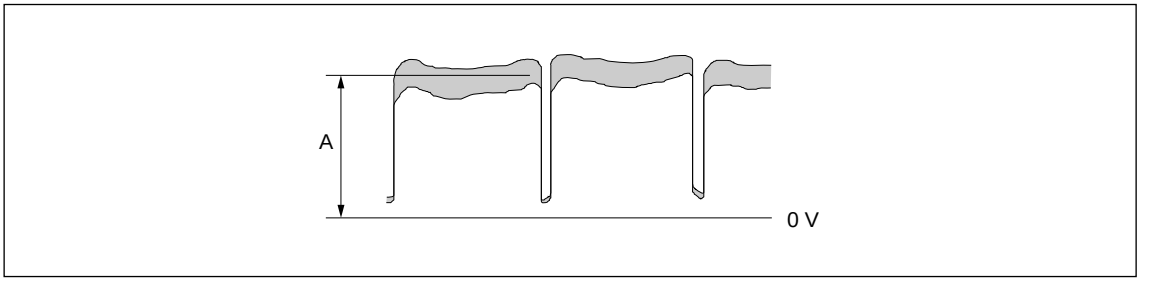
(10) Eject the alignment tape CR5-2A/CR5-2A PS.

13. RF Envelope Adjustment

Measuring equipment: Oscilloscope

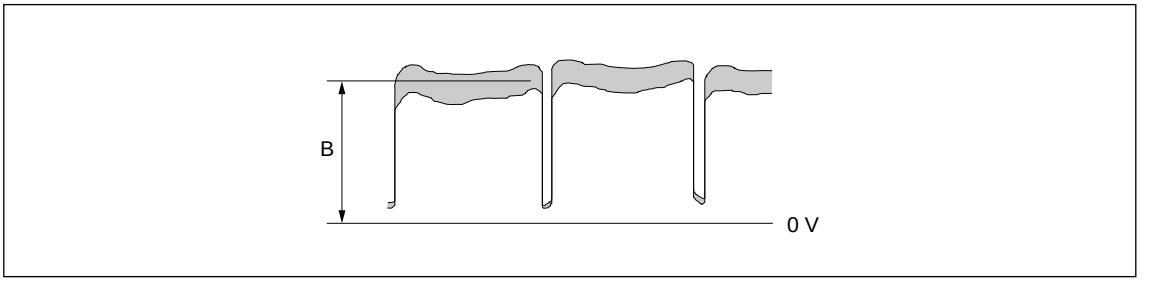
(1) Connect and set the oscilloscope as follows:
CH-1: TP203/DM-89(G-7), DC 500 mV/DIV, 5 ms/DIV, GND: E902/DM-89(G-7)
CH-2: TP4/DM-89(E-1), DC 1 V/DIV, GND: E702/DM-89(D-1)
Trigger: CH-2, – slope

(2) Y adjustment
Playback the flat filed signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment. (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)
Adjustment point: ⊘RV205/DM-89(G-6)
Specification: A = 2.0 ±0.2 V dc



(3) Change the connection of the oscilloscope as follows:
CH-1: TP403/DM-89(D-6), GND: E303/DM-89(B-1)
CH-2: TP5/DM-89(D-1), GND: E702/DM-89(D-1)

(4) C adjustment
Playback the flat filed signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment. (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)
Adjustment point: ⊘RV405/DM-89(C-6)
Specification: B = 2.0 ±0.2 V dc



(5) Stop the playback of the alignment tape CR5-1B/CR5-1B PS or eject it.

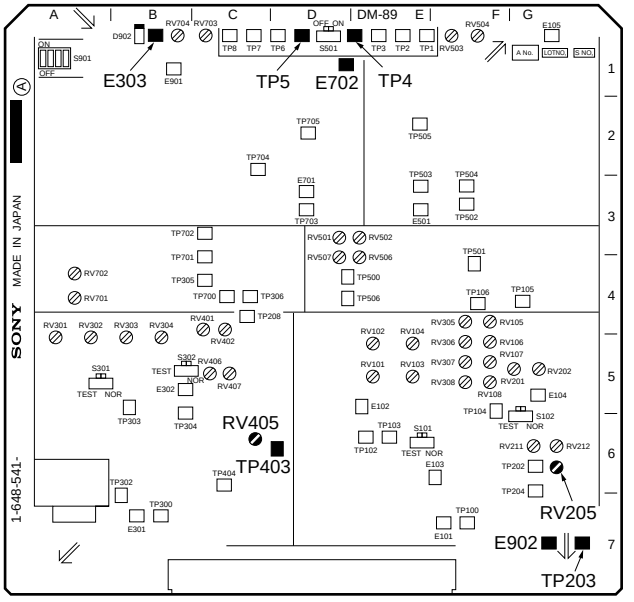
Note

It is not necessary to eject the alignment tape when perform subsequent “14. Search Picture Adjustment”.

(6) Enter A36 : DM VR 5 of the maintenance mode.
(7) Setting of the threshold level
Confirm the setting data of following items of A36 : DM VR 5.

Item of A36 : DM VR 5	Setting data
ENV-TH-H	20
ENV-TH-L	10

(8) To exit A36 : DM VR 5, push the MENU button once.
(9) Data save
Enter A3F : NV-RAM CONTROL, execute “SAVE ALL ADJUST DATA”.
(10) Check that the message “Save Complete” is displayed on the video monitor.
(11) To exit A3F : NV-RAM CONTROL, push the MENU button once.



DM-89 Board (A Side)

14. Search Picture Adjustment

Measuring equipment: Digital voltage meter and Oscilloscope

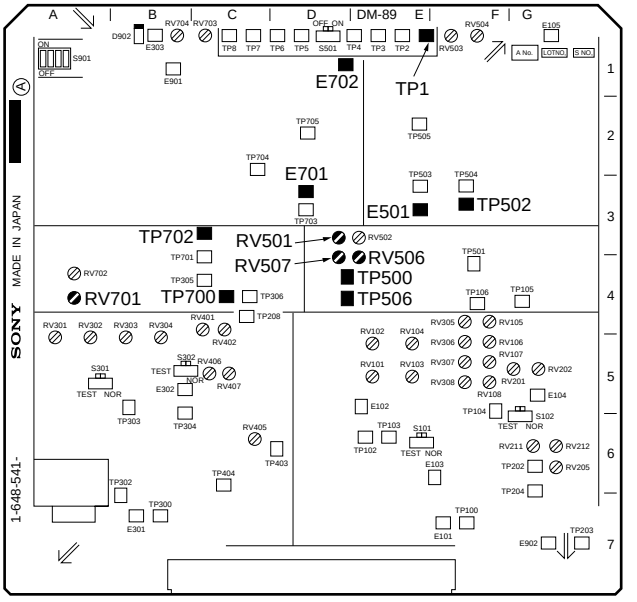
(1) Voltage measurement
Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS, and measure the DC voltage level of the following measurement points with the digital voltage meter. (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)

Measurement point	Measuring value (fill up)
TP500/DM-89(D-4)	
TP502/DM-89(F-3)	
TP702/DM-89(C-3)	

(2) Turn RV507/DM-89(D-4) fully clockwise (↻).
(3) Short-circuits TP506/DM-89(D-4) and E501/DM-89(E-3) with a shorting clip.
(4) Short-circuits TP700/DM-89(C-4) and E701/DM-89(D-3) with a shorting clip.
(5) Voltage adjustment
Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS, and adjust the DC voltage level of the following measurement points with the digital voltage meter as identical to measured voltage in step (1). (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)

Measurement point	Adjustment point	Note
TP500/DM-89(D-4)	⊘RV506/DM-89(E-4)	SPD OFFSET
TP502/DM-89(F-3)	⊘RV501/DM-89(D-3)	Y DEEM
TP702/DM-89(C-3)	⊘RV701/DM-89(A-4)	C DEEM

(6) Disconnect the shorting clip from TP506/DM-89(D-4) and E501/DM-89(E-3).
(7) Disconnect the shorting clip from TP700/DM-89(C-4) and E701/DM-89(D-3).



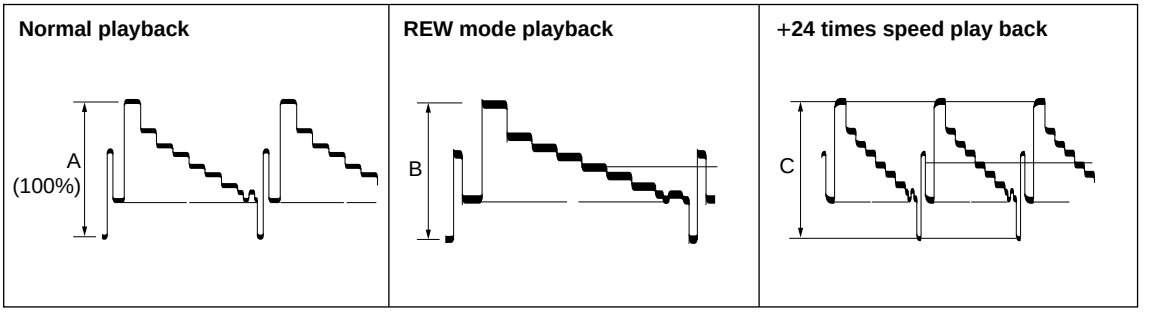
DM-89 Board (A Side)

(8) Connect and set the oscilloscope as follows:
CH-1: TP1/DM-89(E-1), DC 1 V/DIV, 10 µs/DIV, GND: E702/DM-89(D-1)

(9) Gain adjustment
Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS in the following modes, and perform the adjustment and check.
(DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)

For DNW-A22

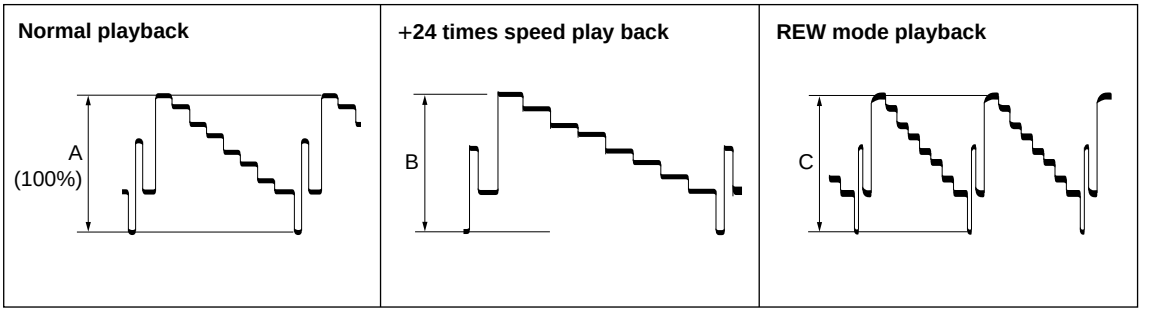
Playback mode	Specification	Adjustment point
Normal	Reference A: 100% (0 dB)	–
REW	B = 100 ±3 % (0 ±0.2 dB)	⊘RV507/DM-89(D-4)
+24 times speed	C = 100 ±10 % (0 ±1.0 dB)	Check only



DNW-A22

For DNW-A22P

Playback mode	Specification	Adjustment point
Normal	Reference A: 100% (0 dB)	–
+24 times speed	B = 105 ±5 % (0.4 ±0.4 dB)	⊘RV507/DM-89(D-4)
REW	C = 100 ±10 % (0 ±1.0 dB)	Check only



DNW-A22P

(10) Stop the playback of the alignment tape CR5-1B/CR5-1B PS or eject it.

Note

It is not necessary to eject the alignment tape when perform subsequent “15. Guard Band Width Adjustment”.

15. Guard Band Width Adjustment

Measuring equipment: Video monitor

(1) Enter A35 : DM VR 4 of the maintenance mode
(2) Confirm the setting data of following items of A35 : DM VR 4.

Note

Some setting data are different according to the board number suffix (XX of 1-648-541-XX) of DM-89 board.

Item of A35 : DM VR 4	Setting data for DNW-A22		Setting data for DNW-A22P	
	Suffix-13	Suffix-14 and higher	Suffix-13	Suffix-14 and higher
GUARD BAND METAL-Y	38	1D	29	27
GUARD BAND METAL-C	21	1C	16	23
GUARD BAND OXIDE-Y	48	32	3B	2F
GUARD BAND OXIDE-C	30	31	16	29

(3) Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS in the JOG mode. (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)
(4) Turn the search dial until guard band appears at the center on the video monitor screen. (Refer to Figure 1 on next page.)
(5) METAL, Guard band width confirmation
Confirm that the guard band width is satisfied the following specifications. When the specifications are satisfied, go to step (8). If not, perform step (6) or (7).
Specification 1: Guard band width is below a third of video display screen.
Specification 2: Guard band width of C side > Guard band width of Y side
(6) If the specification 1 is not satisfied:
Subtract 1 from each data value of GUARD BAND METAL-Y and GUARD BAND METAL-C, then perform the confirmation of step (5) again.
(7) If the specification 2 is not satisfied:
Add 1 to the data value of GUARD BAND METAL-C, then perform the confirmation of step (5) again.
(8) METAL C confirmation
Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS in the VARIABLE +1 time speed mode (or the search +1 time speed), and confirm the following specification. When the specification is satisfied, go to step (10). If not, perform step (9). (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)
Specification 3: The picture (color-bar) on the video monitor is colored.
(The C signal is not fully muted.)
(9) If the specification 3 is not satisfied:
Subtract 1 from the data value of GUARD BAND METAL-C, then perform the confirmation of step (8) again.
(10) Eject the alignment tape CR5-1B/CR5-1B PS.

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(11) Playback the 75% color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS in the JOG mode. (DNW-A22: CR5-2A, DNW-A22P: CR5-2A PS)
(12) Turn the search dial until guard band appears at the center on the video monitor screen. (Refer to Figure 1.)
(13) OXIDE, Guard band width confirmation
Confirm that the guard band width is satisfied the following specifications. When the specifications are satisfied, go to step (16). If not, perform step (14) or (15).
Specification 1: Guard band width is below a half of video display screen.
Specification 2: Guard band width of C side > Guard band width of Y side
(14) If the specification 1 is not satisfied:
Subtract 1 from each data value of GUARD BAND OXIDE-Y and GUARD BAND OXIDE-C, then perform the confirmation of step (13) again.
(15) If the specification 2 is not satisfied:
Add 1 to the data value of GUARD BAND OXIDE-C, then perform the confirmation of step (13) again.
(16) OXIDE C confirmation
Playback the 75% color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS in the VARIABLE +1 time speed mode (or the search +1 time speed), and confirm the following specification. When the specification is satisfied, go to step (18). If not, perform step (17).
(DNW-A22: CR5-2A, DNW-A22P: CR5-2A PS)
Specification 3: The picture (color-bar) on the video monitor is colored.
(The C signal is not fully muted.)
(17) If the specification 3 is not satisfied:
Subtract 1 from the data value of GUARD BAND OXIDE-C, then perform the confirmation of step (16) again.
(18) Eject the alignment tape CR5-2A/CR5-2A PS.
(19) To exit A35 : DM VR 4, push the MENU button once.
(20) Data save
Enter A3F : NV-RAM CONTROL of the maintenance mode, execute “SAVE ALL ADJUST DATA”.
(21) Check that the message “Save Complete” is displayed on the video monitor.
(22) To exit A3F : NV-RAM CONTROL, push the MENU button once.
(23) To exit the maintenance mode, push the MENU button three time again.

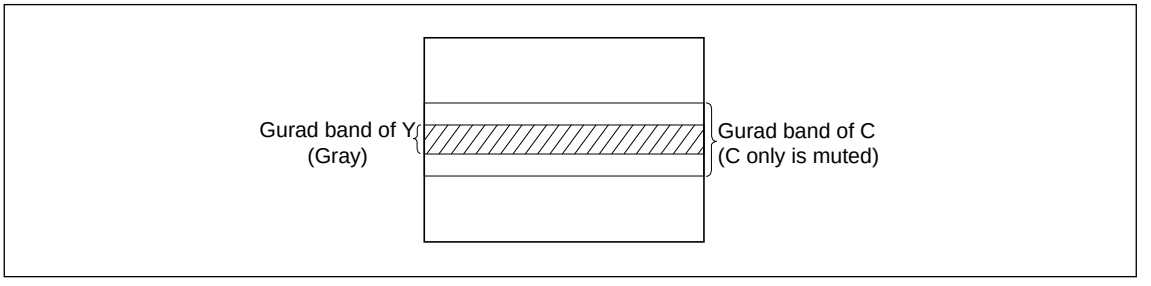


Figure 1. Guard Band

Note

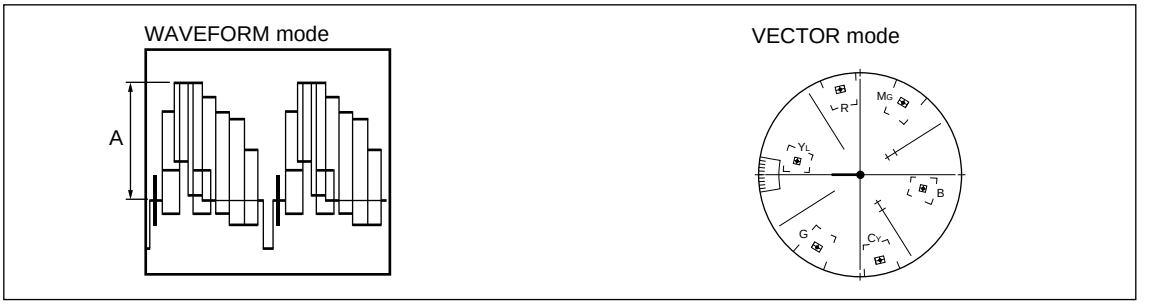
The menu of the maintenance mode is superimposed on picture on the video monitor in fact.
If the superimposed picture obstructs the maintenance operation, set the CHARACTER switch on the sub control panel to OFF. (Be sure to return it to ON after the maintenance operation is completed.)

16. Composite Output Level Adjustment

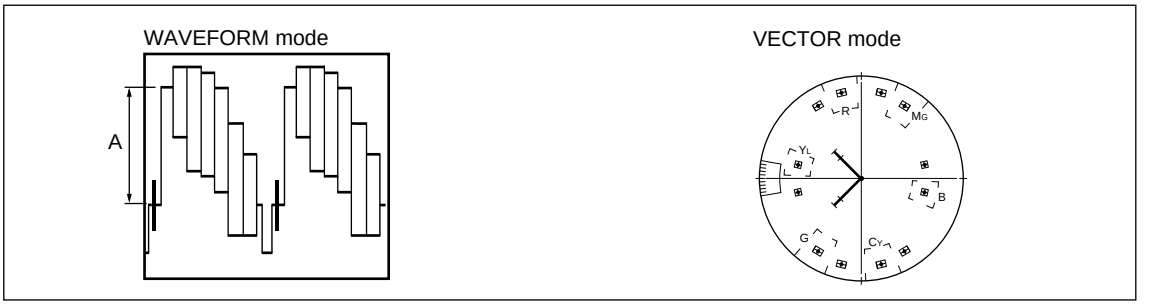
Measuring equipment: Composite waveform/vector monitor (terminated with 75 Ω)

(1) METAL level adjustment
Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment of each composite signal level.
(DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)

Equipment setting	Specifications	Adjustment point
WAVEFORM mode	DNW-A22: A = 714 ±7 mV (100 ±1 IRE) DNW-A22P: A = 700 ±7 mV	⊘RV101/TBC-24(F-1)
VECTOR mode	Inside the corresponding frames (DP: ±2.5°, DG: ±2.5%)	⊘RV201/TBC-24(A/B-1)

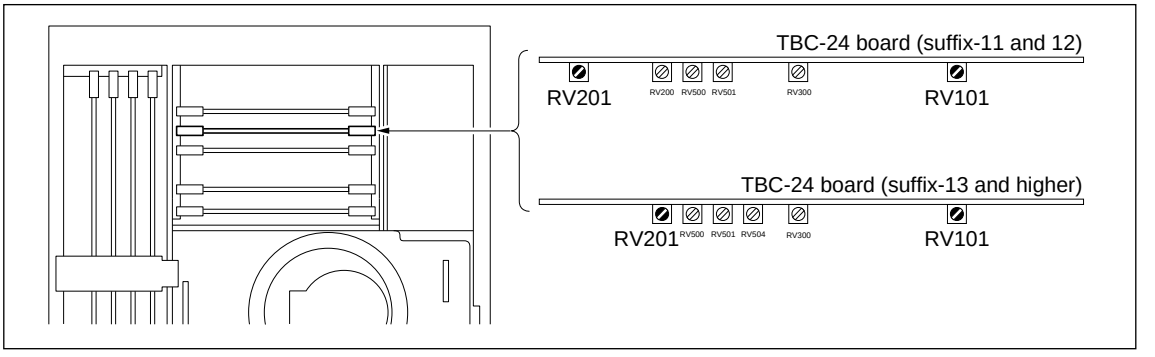


DNW-A22



DNW-A22P

(2) Eject the alignment tape CR5-1B/CR5-1B PS.



RV101 and RV201 on TBC-24 Board

Note

RV101 and RV201 on TBC-24 board are possible to adjust without using the extension board.

(3) OXIDE Y/C confirmation

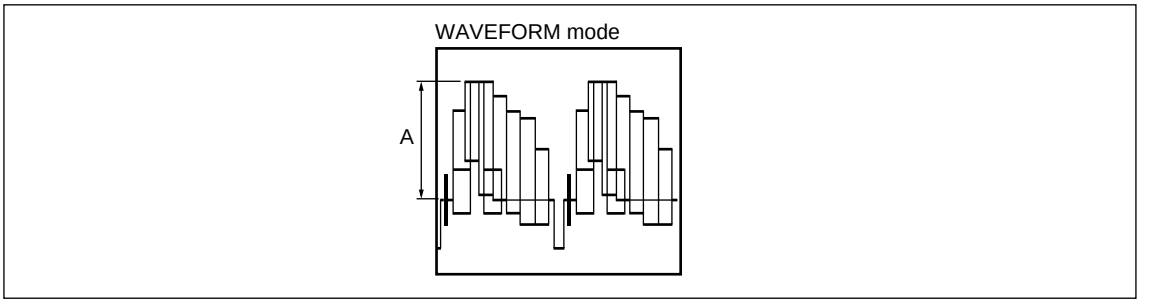
Playback the 75% color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS, and perform the check of each composite signal level. If the specification is not satisfied, perform the adjustment of the composite output level.

(DNW-A22: CR5-2A, DNW-A22P: CR5-2A PS)

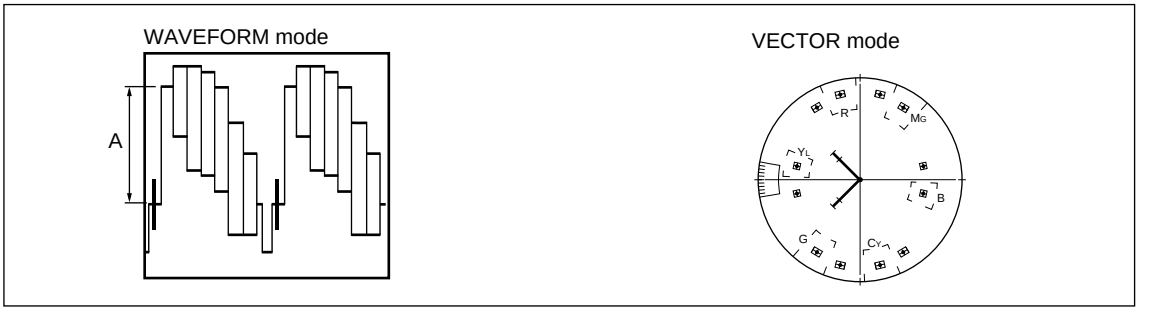
Note

For DNW-A22, perform the check (adjustment) for Y signal only.

Observation composite	Specifications for DNW-A22	Specifications for DNW-A22P	Adjustment point
Y	A = 714 ±7 mV (100 ±1 IRE)	A = 700 ±7 mV	⊘RV504/DM-89(F-1)
R-Y/B-Y	–	B = 525 ±5 mV p-p	⊘RV704/DM-89(B-1) DNW-A22P only

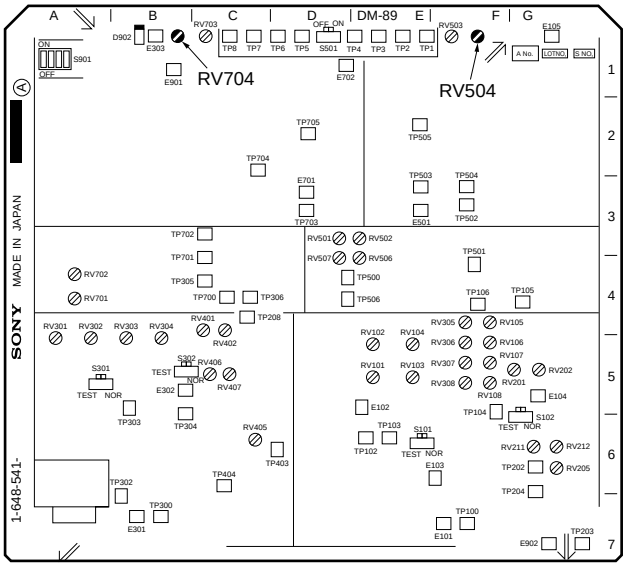


DNW-A22



DNW-A22P

(4) Eject the alignment tape CR5-2A/CR5-2A PS.



DM-89 Board (A Side)

6-4. EQ-56 Board Replacement

The electrical adjustments are essential after the EQ-56 board is replaced.
To perform the electrical adjustments, the following equipment and fixtures are required.

- Oscilloscope: TEKTRONIX 2465B or equivalent
- Composite video monitor (to display of the maintenance mode)
- Extension board: EX-377 (SONY part No. J-6269-810-A) for DM-89 board extension
- Alignment tape(s)

For DNW-A22:	SR5-1	(SONY part No. 8-960-075-01),
	CR5-1B	(SONY part No. 8-960-096-41), and
	CR5-2A	(SONY part No. 8-960-097-44)
For DNW-A22P:	SR5-1P	(SONY part No. 8-960-075-51),
	CR5-1B PS	(SONY part No. 8-960-096-91), and
	CR5-2A PS	(SONY part No. 8-960-097-44)

6-4-1. Replacement Procedure

Note

Turn off the POWER switch before starting the replacement.

(1) Remove the upper lid, board retainer (S), and EQ-56 (original) board.
(Refer to “6-1-3. Plug-in Board Pulling out/Insertion”.)
(2) Disconnect the harnesses to the EQ-56 (original) board, then connect them to the EQ-56 (new) board.
(3) Insert the EQ-56 (new) board.
(Refer to “6-1-3. Plug-in Board Pulling out/Insertion”.)
(4) Extend the DM-89 board with the EX-377 extension board.
(5) Clean the video heads.
(Refer to “5-2-5. Tape Running Surface of Upper Drum and Video Heads Cleaning”.)
(6) Set the CHARACTER switch on the sub control panel to ON.
(7) Perform the electrical adjustment (Section 6-5-2).
(8) Turn off the power.
(9) Remove the DM-89 board from the extension board, then pull out the extension board.
(10) Insert the DM-89 board.
(11) Install the board retainer (S).
(Refer to “6-1-3. Plug-in Board Pulling out/Insertion”.)
(12) Install the upper lid.
(13) Return the CHARACTER switch state to previous state.

6-4-2. Electrical Adjustments

Adjustment Items

No.	Item		Adjustment point	Notes
0	Preparation			
1	All RF system adjustment			
			A17 : A11-A16 ALL ADJUST	Automatically adjustment
		Data save	A1F : NV-RAM CONTROL	
2	EQ RF output level adjustment for BETACAM/BETACAM SP PB			
		METAL Y	A30 : EQ VR : RF GAIN METAL-Y-A A30 : EQ VR : RF GAIN METAL-Y-B	TP100/DM-89
		METAL C	A30 : EQ VR : RF GAIN METAL-C-A A30 : EQ VR : RF GAIN METAL-C-B	TP300/DM-89
		OXIDE C	A30 : EQ VR : RF GAIN OXIDE-C-A A30 : EQ VR : RF GAIN OXIDE-C-B	TP300/DM-89
		OXIDE Y	A30 : EQ VR : RF GAIN OXIDE-Y-A A30 : EQ VR : RF GAIN OXIDE-Y-B	TP100/DM-89
		Data save	A3F : NV-RAM CONTROL	

For Maintenance Mode

Describes the operation of the maintenance mode as follows:

How to enter the maintenance mode

Push S1101(G-1) on the SS-63 board.

How to enter the next menu

(1) Push the JOG button. = **Search dial enters into the JOG mode.**
(2) To set the cursor (✻ mark) to the desired menu (mode), turn the search dial.
(3) Push the SET button once.

How to exit the current menu (mode)

Push the MENU button once.

Note

If the MENU button is pushed several times, the maintenance mode exits.

How to change the data value (for manual adjustment only)

(1) To set the cursor (✻ mark) to the item, turn the search dial.
(2) Turn the search dial slowly while pressing the JOG button. = **Data value changes.**
REVERSE direction: decrease the data value (00's next is FF)
FORWARD direction: increase the data value (FF's next is 00)

Note

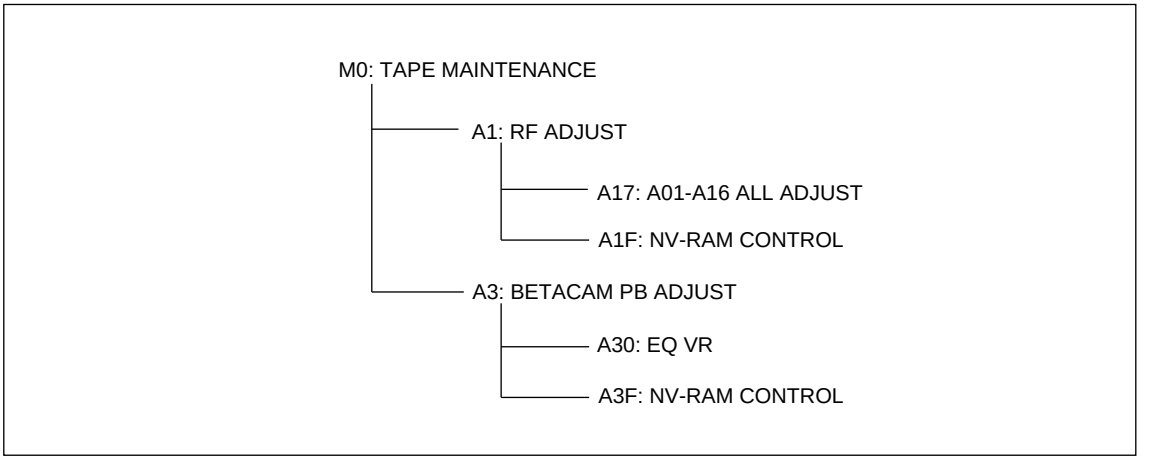
During adjustment, change the rotational direction of the search dial according to the change of waveform that is displayed on the measuring equipment.

How to save the data

(1) To set the cursor (∗ mark) to A?F : NV-RAM CONTROL (A1F or A3F), turn the search dial.
(2) Push the SET button once.
(3) To set the cursor (∗ mark) to “SAVE ALL ADJUST DATA”, turn the search dial.
(4) Push the SET button once.

Note

The sub modes and menus of the maintenance mode that are used after replacing the EQ-56 board are as shown below.



0. Preparation

(1) Connect the video monitor to the VIDEO OUTPUT COMPOSITE 3 connector.
(2) Wait for more than 20 minutes after turning on the power.

1. All RF System Adjustment

(1) Insert the alignment tape SR5-1/SR5-1P, then search the alignment tape 00:01:00 in time cord. (DNW-A22: SR5-1, DNW-A22P: SR5-1P)
(2) To enter the maintenance mode, push S1101(G-1) on the SS-63 board.
(3) Enter A17 : A11-A16 ALL ADJUST in the maintenance mode.
  • Displays “Auto Adjust (Push SET)” on the video monitor.
(4) Push the SET button on the lower control panel.
  • Starts the automatically adjustment.
  • Displays “Auto Adjust Complete” on the video monitor after the automatically adjustment is completed.
(5) To exist A17 : A11-A16 ALL ADJUST, push the MENU button on the lower control panel.
(6) Enter A1F : NV-RAM CONTROL.
(7) Execute “SAVE ALL ADJUST DATA”.
  • Displays “Save Complete” on the video monitor after the data save is completed.
(8) To exist the maintenance mode, push the MENU button four times.
(9) Eject the alignment tape SR5-1/SR5-1P.

2. EQ RF Output Level Adjustment for BETACAM/BETACAM SP PB

Measuring equipment: Oscilloscope (Band width limit: ON)

(1) To enter the maintenance mode, push S1101(G-1) of SS-63 board.
(2) Enter A3 : BETACAM PB ADJUST of the maintenance mode.
(3) Enter A30 : EQ VR.
(4) Set the specified data to all items of A30 : EQ VR.

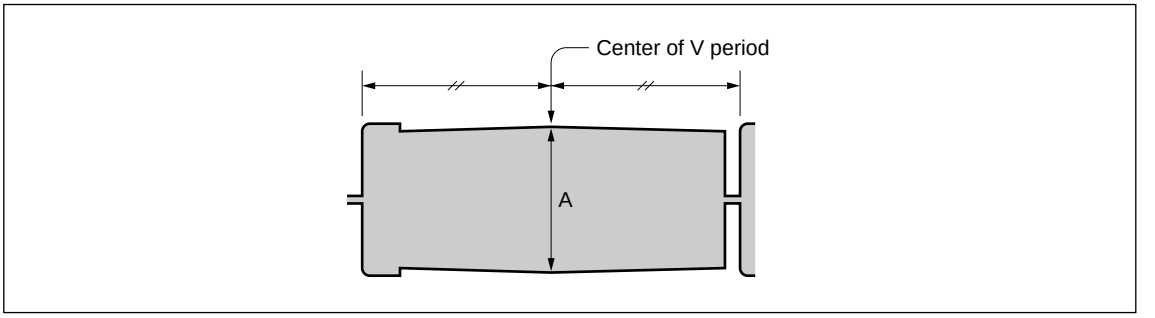
Item of A30 : EQ VR	Setting data for DNW-A22	Setting data for DNW-A22P
RF GAIN METAL-Y-A	55	8E
RF GAIN METAL-Y-B	55	8E
RF GAIN METAL-C-A	3F	6C
RF GAIN METAL-C-B	3F	6C
RF GAIN OXIDE-Y-A	72	9C
RF GAIN OXIDE-Y-B	72	9C
RF GAIN OXIDE-C-A	5A	81
RF GAIN OXIDE-C-B	5A	81

(5) Connect and set the oscilloscope as follows:
CH-1: TP100/DM-89(F-7), AC 100 mV/DIV, 2 ms/DIV, GND: E101/DM-89(F-7)
CH-2: TP4/DM-89(E-1), GND: E702/DM-89(D-1), trigger channel
(6) To perform the alignment tape operation, push the SET button once.
(7) Playback the flat field signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS.
(DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)
(8) To operate the maintenance mode, push the MENU button once.
(9) Perform the METAL Y adjustment.

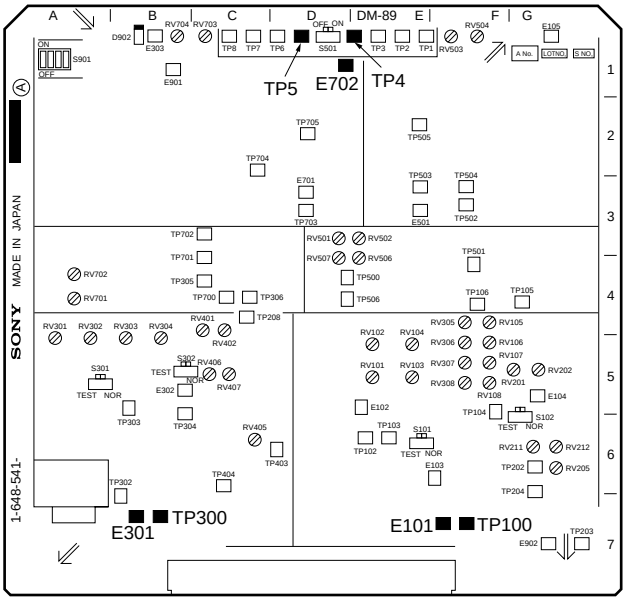
Note

Adjust each signal of Y-A and Y-B channels.
Set the trigger of oscilloscope to − slope before adjusting the Y-A channel.
Set to + slope before adjusting the Y-B channel.

Adjustment points: Y-A channel: A30 : EQ VR : RF GAIN METAL-Y-A
Y-B channel: A30 : EQ VR : RF GAIN METAL-Y-B
Specifications (Y-A and Y-B channels): A = 380 ±20 mV p-p



(10) To perform the tape operation, push the SET button once.
(11) Stop the playback of the alignment tape CR5-1B/CR5-1B PS.



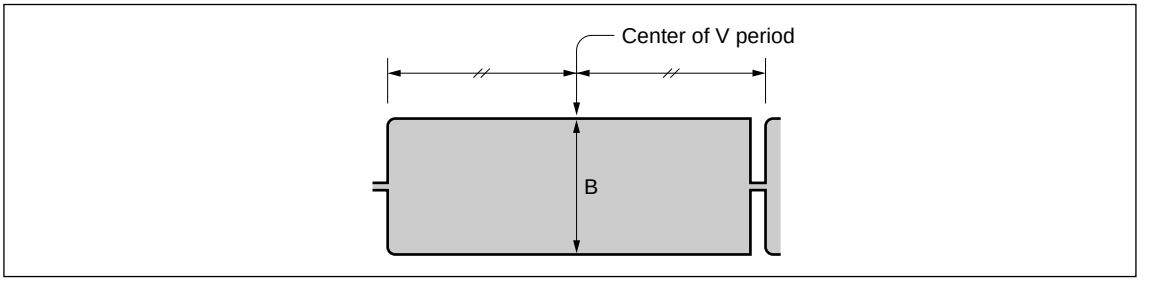
DM-89 Board (A Side)

(12) Change the connection of the oscilloscope as follows:
CH-1: TP300/DM-89(B-7), GND: E301/DM-89(B-7)
CH-2: TP5/DM-89(D-1), GND: E702/DM-89(D-1)
(13) Playback the flat field signal portion (24:00 to 26:00) of the alignment tape CR5-1B or CR5-1B PS.
(DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)
(14) To operate the maintenance mode, push the MENU button once.
(15) Perform the METAL C adjustment.

Note

Adjust each signal of C-A and C-B channels. Set the trigger of oscilloscope to − slope before adjusting the C-A channel. Set to + slope before adjusting the C-B channel.

Adjustment points: C-A channel: A30 : EQ VR : RF GAIN METAL-C-A
C-B channel: A30 : EQ VR : RF GAIN METAL-C-B
Specifications (C-A and C-B channels): B = 380 ±20 mV p-p

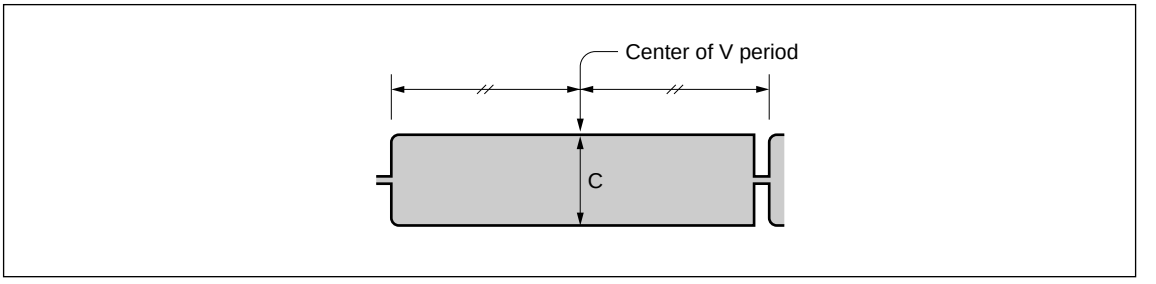


(16) To perform the tape operation, push the SET button once.
(17) Stop the playback of the alignment tape CR5-1B/CR5-1B PS, and eject it.
(18) Playback the flat field signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS.
(DNW-A22: CR5-2A, DNW-A22P: CR5-2A PS)
(19) To operate the maintenance mode, push the MENU button once.
(20) Perform the OXIDE C adjustment.

Note

Adjust each signal of C-A and C-B channels. Set the trigger of oscilloscope to − slope before adjusting the C-A channel. Set to + slope before adjusting the C-B channel.

Adjustment points: C-A channel: A30 : EQ VR : RF GAIN OXIDE-C-A
C-B channel: A30 : EQ VR : RF GAIN OXIDE-C-B
Specifications (C-A and C-B channels): C = 250 ±20 mV p-p



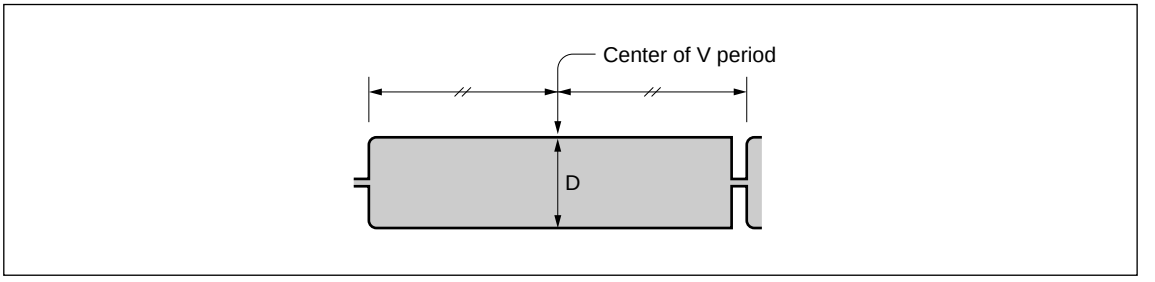
(21) To perform the tape operation, push the SET button once.
(22) Stop the playback of the alignment tape CR5-2A/CR5-2A PS.

(23) Change the connection of the oscilloscope as follows:
CH-1: TP100/DM-89(F-7), GND: E101/DM-89(F-7)
CH-2: TP4/DM-89(E-1), GND: E702/DM-89(D-1)
(24) Playback the flat field signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS.
(DNW-A22: CR5-2A, DNW-A22P: CR5-2A PS)
(25) To operate the maintenance mode, push the MENU button once.
(26) Perform the OXIDE Y adjustment.

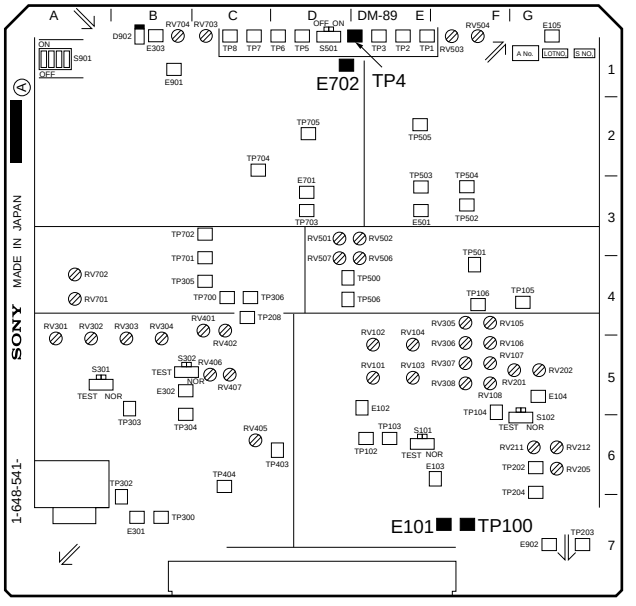
Note

Adjust each signal of Y-A and Y-B channels. Set the trigger of oscilloscope to − slope before adjusting the Y-A channel. Set to + slope before adjusting the Y-B channel.

Adjustment points: Y-A channel: A30 : EQ VR : RF GAIN OXIDE-Y-A
Y-B channel: A30 : EQ VR : RF GAIN OXIDE-Y-B
Specifications (Y-A and Y-B channels): D = 250 ±20 mV p-p



(27) To perform the tape operation, push the SET button once.
(28) Stop the playback of the alignment tape CR5-2A/CR5-2A PS, and eject it.
(29) To operate the maintenance mode, push the MENU button once.
(30) To exit A30 : EQ VR, push the MENU button once again.
(31) Data save
Enter A3F : NV-RAM CONTROL, then execute “SAVE ALL ADJUST DATA”.
(32) Check that the message “Save Complete” is displayed on the video monitor.
(33) To exit the maintenance mode, push the MENU button four times.



DM-89 Board (A Side)

http://getMANUAL.com

6-5. SS-63 Board Replacement

For the board replacement, refer to “6-1-3. Pulling out/Insertion of Plug-in Board”.
However, the following service operations are required in before and after the SS-63 board replacement.

Note

The SS-63 board of the board numbers 1-661-127-11 and 1-661-127-12 cannot be used to DNW-A22/A22P. Be sure to confirm the suffix of board number. The board number is indicated on the left margin (A-6) of A side.

Before replacement

- Check the setting of setup menu (Main menu and Extended menu of 525/60 and 625/50 line systems)
  Record the setting of setup menu to a copy of the setting check sheet in Appendix B, if possible.
- Setting of the DIP switches
  Set the DIP switches (S101, S1100, S1102, and S1900) according to the model.
  Refer to Section 6-5-1 for detail.

After replacement

- Setting of setup menu (Main menu and Extended menu of 525/60 and 625/50 line systems)
  Reset the setup menu as recorded setting on the setting check sheet (copy).
- Error logging data clear and Calendar/Clock setting
  There is a possibility that the SS-63 board to be installed has the another error logging data in its NV-RAM. Therefore, clear the error logging data.
  And, the calendar/clock are required to indicate of the day and time at error occurrence. There is a possibility that the date and time are wrong. Set the calendar/clock to the correct day and time.
  Refer to Section 6-5-2 for detail.

  Note

  The NV-RAM on the SS-63 board has the calendar and clock data.

6-5-1. Setting of DIP Switches

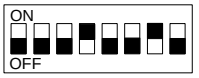
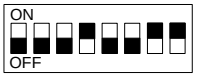
Notes

- The “ ■ ” mark shows the knob position.
- For detailed description of each DIP switch, refer to Section 1-10-5.

(1) Setting the DIP switch S1102 (F-2) as follows:

Note

Setting is different according to the model.

Model	Setting
DNW-A22	
DNW-A22P	

(2) Confirm that the DIP switches S101(A-1), S1100(J-1), and S1900(P-1) are following settings.

Ref. No.	Setting	Remakes
S101		This setting is the factory setting.
S1100		See below notes.
S1900		All OFF

Notes

- After completing the setting of setup menu, be sure to set the switch No. 1 of S1100 to identical setting as the SS-63 board that is removed.
- Be sure to set the switch No. 2 of S1100 to identical setting as the SS-63 board that is removed.

6-5-2. Error Logging Data Clear and Calendar/Clock Setting

Clear the another error logging data in NV-RAM on the SS-63 board that is installed, and set the calendar/clock to the correct day and time.
Clear and set the data as follows after entering the error logger display mode.

(1) Enter the error logger display mode.
(Enter the maintenance mode, then enter M2 : ERROR LOGGER.)
Note
Contents of the error logger are superimposed on the video monitor connected to the VIDEO OUTPUT COMPOSITE 2 connector.

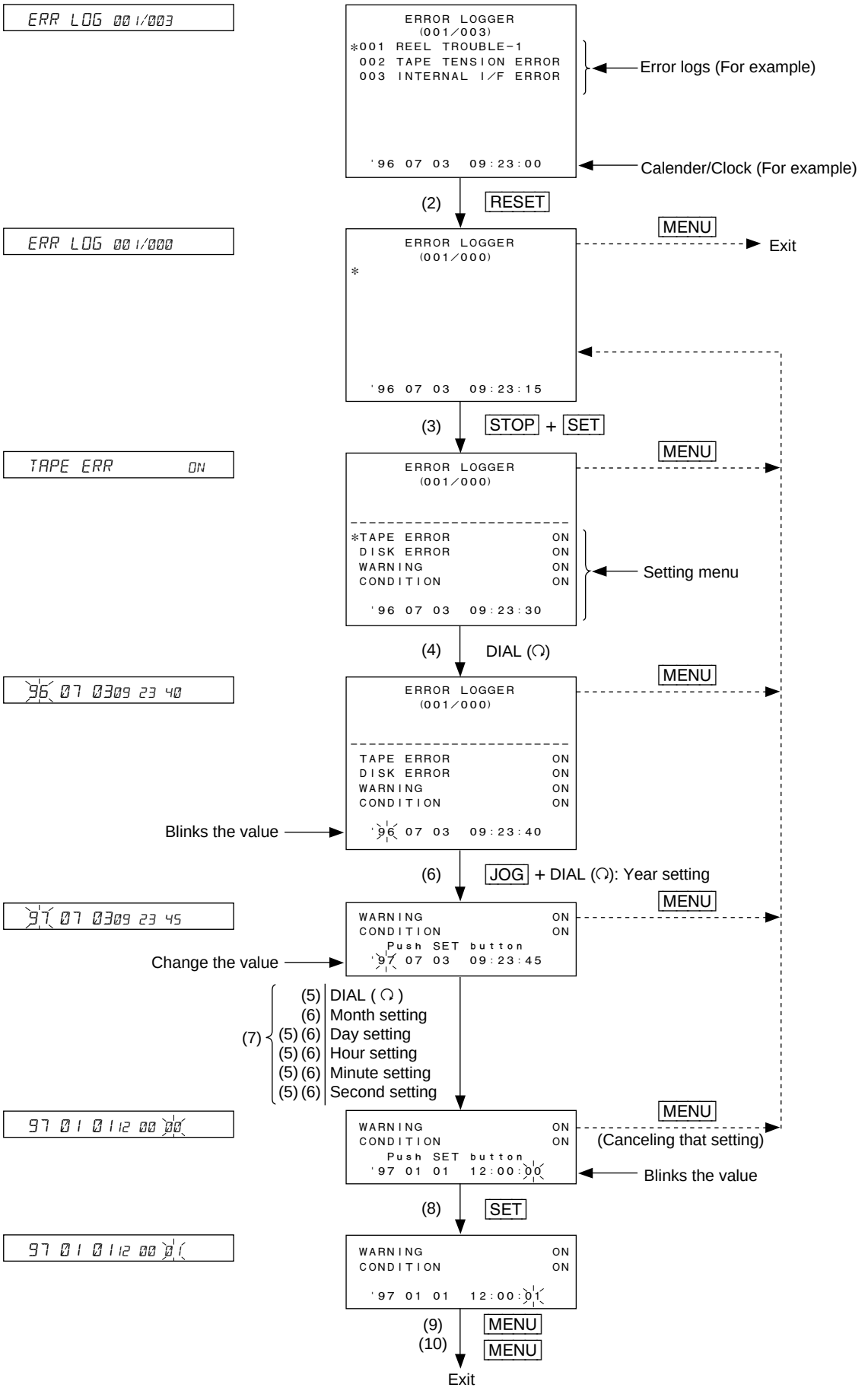
Error logging data clear [step (2)]

(2) Push the RESET button once on the lower control panel while pressing the STOP button.

Calendar/Clock setting [steps (3) through (8)]

(3) Push the SET button once on the lower control panel while pressing the STOP button.
Note
After pushing the SET button once, displays the setting menu on lower half part of the superimposed screen, and cursor (✻ mark) moves to the setting menu.
(4) Turn the search dial to FORWARD direction (↻) until the value for year on last line (calendar and clock) blinks.
Note
The ✻ mark is not displayed on the line of the calendar and clock.
(5) Blink the value of changing (setting) item (year, month, day, hour, minute, or second) by turning the search dial.
(6) Change its item to a desired value by turning the search dial while pressing the JOG button on the lower control panel.
Notes
- Change the value, then displays message “Push SET button”.
  And stops a step forward of the calendar/clock.
- If canceling that setting (return to previous value), don’t push the SET button, push the MENU button.
  When pushing the MENU button once, exits the setting menu.

(7) Repeat steps (5) and (6) until changing tha all values of the requisite items.
(8) To save the setting, push the SET button once on the lower control panel.
(9) Push the MENU button once to exit the setting menu.
(10) To exit the error logger display mode, push the MENU button once again.
Note
When entering the error logger display mode from the maintenance mode, returns the maintenance mode screen. Exits the maintenance mode by pushing the MENU button once again.


ERR LOG 001/003
ERROR LOGGER
(001/003)
*001 REEL TROUBLE-1
002 TAPE TENSION ERROR
003 INTERNAL I/F ERROR
'96 07 03 09:23:00
Error logs (For example)
Calender/Clock (For example)
(2)
RESET
ERR LOG 001/000
ERROR LOGGER
(001/000)
*
'96 07 03 09:23:15
MENU
Exit
(3)
STOP + SET
TAPE ERR ON
ERROR LOGGER
(001/000)
*TAPE ERROR ON
DISK ERROR ON
WARNING ON
CONDITION ON
'96 07 03 09:23:30
Setting menu
(4)
DIAL (↺)
96 07 03 09 23 40
'96 07 03 09:23:40
Blinks the value
(6)
JOG + DIAL (↺): Year setting
97 07 03 09 23 45
WARNING ON
CONDITION ON
Push SET button
'97 07 03 09:23:45
Change the value
(7)
(5) DIAL (↺)
(6) Month setting
(5) (6) Day setting
(5) (6) Hour setting
(5) (6) Minute setting
(5) (6) Second setting
97 01 01 12 00 00
'97 01 01 12:00:00
(Canceling that setting)
(8)
SET
97 01 01 12 00 01
'97 01 01 12:00:01
(9)
(10)
MENU
Exit

6-6. TBC-23 Board Replacement

The electrical adjustments are essential after the TBC-23 board is replaced.
To perform the electrical adjustment, the following equipment and fixtures are required.

Note

The TBC-23 board of the service parts code suffix-A cannot be used to this unit. Be sure to confirm the suffix of service parts code before replacement. The service parts code is indicated on near the top right corner (F-2) of A side of TBC-23 board.
For the TBC-23 board of the board number 1-648-543-13 or 1-648-543-14, modification is required. Please consult with local Sony's sales/service office in detail. The board number is indicated on the left margin (A-6) of A side of TBC-23 board.

- Composite waveform/vector monitor
  For DNW-A22: TEKTRONIX 1780R or equivalent (With LINE SELECT)
  For DNW-A22P: TEKTRONIX 1781R or equivalent (With LINE SELECT)
- VISC phase adjusting tool
  For DNW-A22P only: (SONY part No. J-6332-240-A)
- Composite video monitor
- 75 Ω terminators (1 piece)
- Cleaning tape — BCT-5CLN (SONY standard products)
- Alignment tapes
  For DNW-A22: CR5-1B (SONY part No. 8-960-096-41) and CR5-2A (SONY part No. 8-960-097-44)
  For DNW-A22P: CR5-1B PS (SONY part No. 8-960-096-91) and CR5-2A PS (SONY part No. 8-960-098-44)

6-6-1. Replacement Procedure

Note

Turn off the POWER switch before starting the replacement.

(1) Remove the upper lid, board retainer (S), and TBC-23 (original) board.
(Refer to "6-1-3. Plug-in Board Pulling out/Insertion".)
(2) Inserting a new TBC-23 board to the slot for TBC-23 board.
(3) Connect the one disconnected harness to CN1 on the TBC-23 (new) board.
(4) Clean the video heads by cleaning tape. (Refer to "5-2-1. Cleaning by Cleaning Tape".)
(5) Perform the electrical adjustments (Section 6-6-2).
(6) For DNW-A22 only
Return the ITEM-709 and ITEM-713 of setup extend menu to previous settings after the electrical adjustments are completed.
(7) Return the states of S1100-1 on the SS-63 board and control panels to their previous states.
(8) Turn off the power.
(9) Install the board retainer (S) and upper lid. (Refer to Section 6-1-3.)

6-6-2. Electrical Adjustments

Adjustment Items

No.	Item		Adjustment point	Notes
0	Preparation			
1	Initial data setting		All items of A37 : TBC VR	
		Data save	A3F : NV-RAM CONTROL	
2	PB video phase confirmation (Note 1)		–	VIDEO OUTPUT COMPOSITE 1
			⊘RV300/TBC-24 A37 : TBC VR : SQ Y RZ (Note 2)	VIDEO OUTPUT COMPOSITE 1
3	TBC Y/C delay confirmation (Note 1)		–	VIDEO OUTPUT COMPOSITE 1
		METAL	⊘RV500/TBC-24 A37 : TBC VR : SQ C RZ (Note 3) ⊘RV504/TBC-24 (Note 4)	VIDEO OUTPUT COMPOSITE 1
		OXIDE	⊘RV501/TBC-24	VIDEO OUTPUT COMPOSITE 1
4	VISC phase adjustment		⊘RV200/TBC-23	VIDEO OUTPUT COMPOSITE 1
			A37 : TBC VR : VISC PHASE	VIDEO OUTPUT COMPOSITE 1
		Data save	A3F : NV-RAM CONTROL	

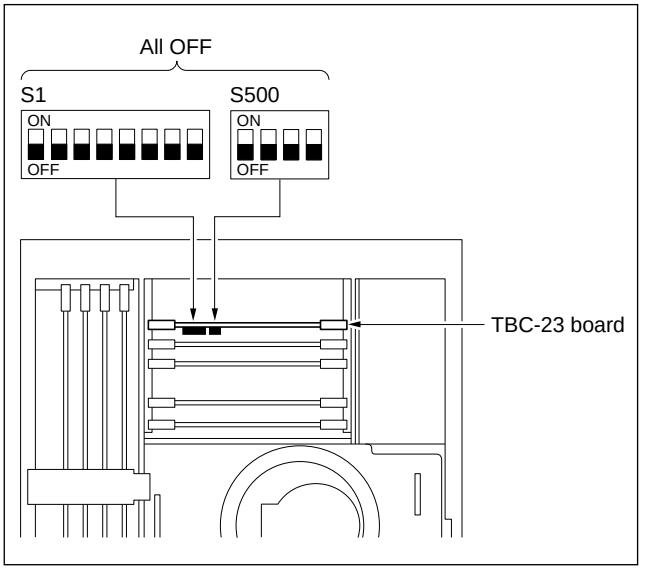
Note 1: If the specification is not satisfied, adjust the TBC-24 board.
Note 2: If the specification is not satisfied by RV300/TBC-24, change the data of A37: TBC VR: SQ Y RZ.
Note 3: If the specification is not satisfied by RV500/TBC-24, change the data of A37: TBC VR: SQ C RZ.
Note 4: This RV504 is equipped with the board number suffixes 13 and higher of TBC-24 board.

0. Preparation

Setting (Check) of the switches on the TBC-23 board

Confirm that the switches on TBC-23 board are factory settings.

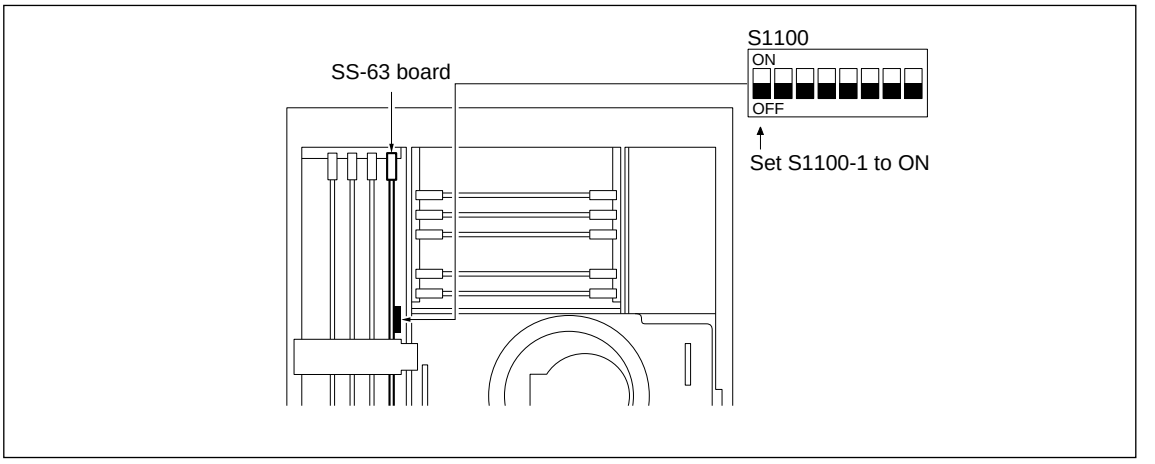
Ref. No.	Switch No.	Factory setting
S1	1	OFF
	2	OFF
	3	OFF
	4	OFF
	5	OFF
	6	OFF
	7	OFF
	8	OFF
S500	1	OFF
	2	OFF
	3	OFF
	4	OFF



S1 and S500 of TBC-23 Board

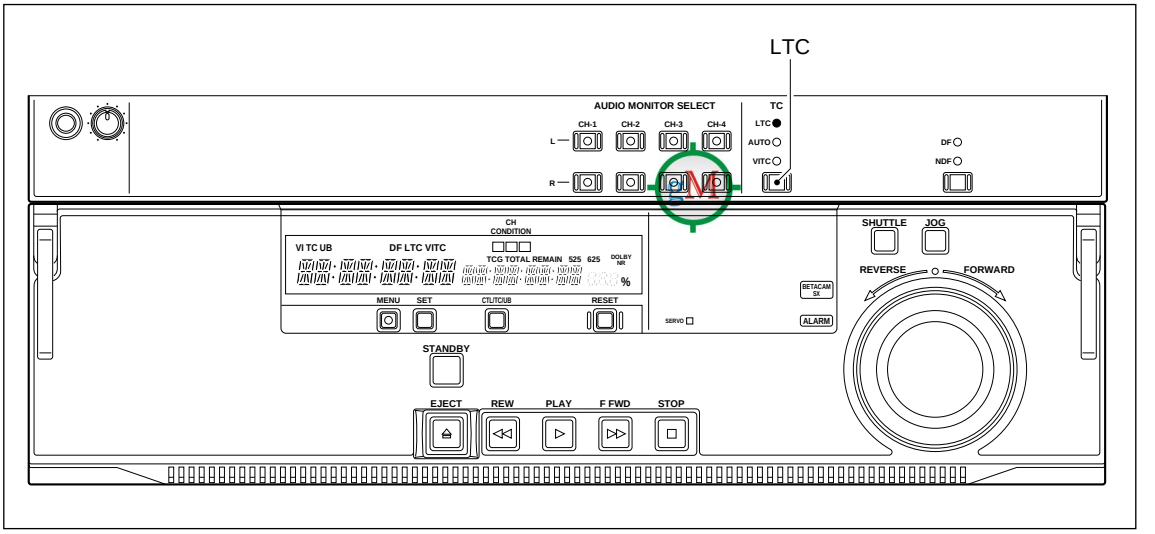
Setting of DNW

(1) Set S1100-1 on SS-63 board to ON to treat the extended menu of the setup menu.

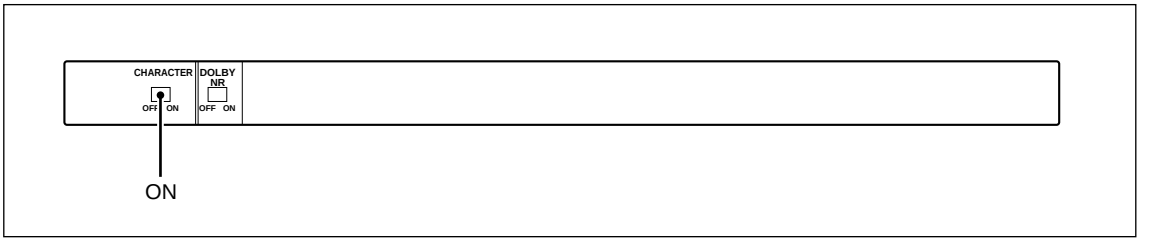


S1100 of SS-63 Board

(2) Turn on the power, and set each control panel as shown below.



Upper/Lower Control Panels



Sub Control Panel

(3) Setting of the setup extend menu

- For DNW-A22

  Set the SUB-ITEMs of ITEM-709 and ITEM-713 as shown below.

  After adjustments are completed, return the SUB-ITEMs to their previous settings.

ITEM	SUB-ITEM	Setting	Previous setting (fill up)
709 : CAV LEVEL FORMAT	1. OUTPUT CAV LEVEL	B-CAM	
713 : VIDEO SETUP REFERENCE LEVEL	0. MASTER LEVEL	0.0%	
	3. BETACAM PB LEVEL	MSTER	
	4. OUTPUT LEVEL	MSTER	

- For DNW-A22P

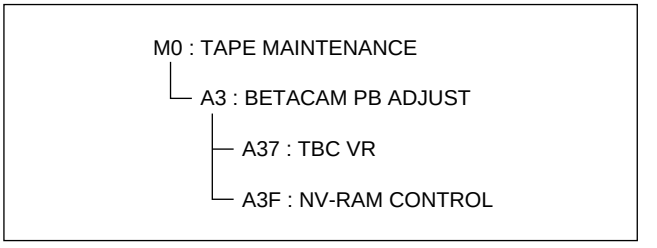
  None.

For Maintenance Mode

Describes the operation of the maintenance mode as follows:

Notes

The sub mode and menus of the maintenance mode that are used after replacing the TBC-23 board are as shown below.



• How to enter the maintenance mode

(1) Push S1101 (G-1) on the SS-63 board.

• How to enter the next menu (mode)

(1) Push the JOG button once.
= **Search dial enters into the JOG mode.**

(2) To set the cursor (✻ mark) to the desired menu (mode), turn the search dial.

(3) Push the SET button once.

• How to exit the current menu (mode)

(1) Push the MENU button once.

Note

If the MENU button is pushed several times, the maintenance mode exits.

• How to change the data value

(1) To set the cursor (✻ mark) to the item, turn the search dial.

(2) Turn the search dial slowly while pressing the JOG button. = **Data value changes.**
REVERSE direction: decrease the data value (00's next is FF)
FORWARD direction: increase the data value (FF's next is 00)

Note

During adjustment, change the rotational direction of the search dial according to the change of waveform that is displayed on the measuring equipment.

• How to save the data

(1) To set the cursor (✻ mark) to A3F : NV-RAM CONTROL, turn the search dial.

(2) Push the SET button once.

(3) To set the cursor (✻ mark) to "SAVE ALL ADJUST DATA", turn the search dial.

(4) Push the SET button once.

1. Initial Data Setting

(1) Enter the maintenance mode, then enter A37 : TBC VR.
(2) Set the specified data to all items of A37 : TBC VR.

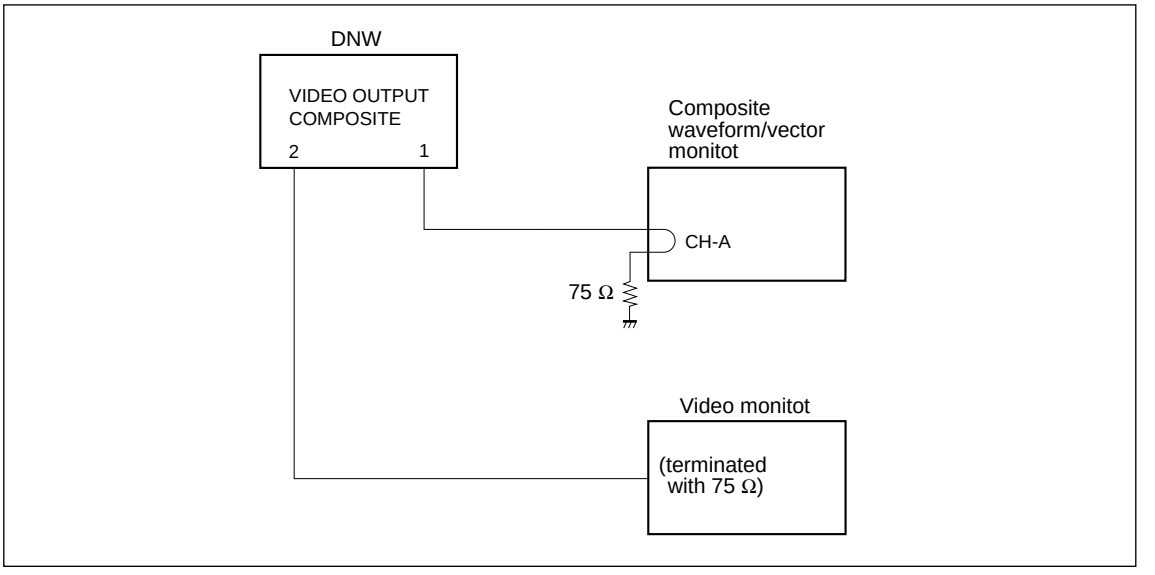
Item of A37 : TBC VR	Setting data for DNW-A22	Setting data for DNW-A22P
SQ Y RZ	4C	4B
SQ C RZ	6F	6E
VISC PHASE	06	02

(3) To exit A37 : TBC VR, push the MENU button once.
(4) Data save
Enter A3F : NV-RAM CONTROL of the maintenance mode, then execute “SAVE ALL ADJUST DATA”.
(5) Check that the message “Save Complete” is displayed on the video monitor.
(6) To exit A3F : NV-RAM CONTROL, push the MENU button once.
(7) To exit the maintenance mode, push the MENU button three times again.

2. PB Video Phase Confirmation

Measuring equipment: Refer to next figure.

(1) Connect the waveform/vector monitor and video monitor as shown below.



Connection in PB Video Phase Confirmation

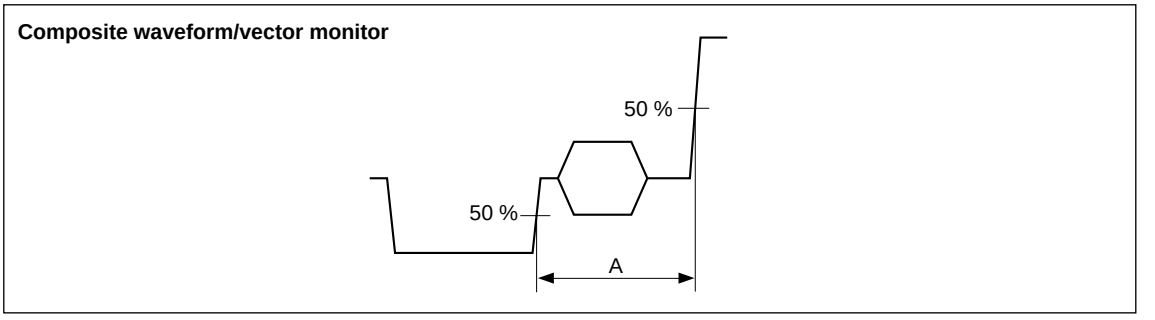
Y phase confirmation [to step (15)]

(2) Set the composite waveform/vector monitor as follows:
WAVEFORM mode, SWEEP: 2H, MAG ON, INPUT: CH-A, INT REF

(3) Display the BURST signal part of CH-A side on the composite waveform/vector monitor.

(4) Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS.
(DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)

(5) Confirm that time between the 50% position at rising edge of H SYNC signal and the 50% position at the rising edge of white signal portion.
If the specification is not satisfied, perform the adjustment.
Adjustment point: ◓RV300/TBC-24(D-1)
Specification: A = 5.2 ±0.1 µs
If the specification is not satisfied by adjustment, perform step (6) through (9) after setting RV300 to the mechanical center.



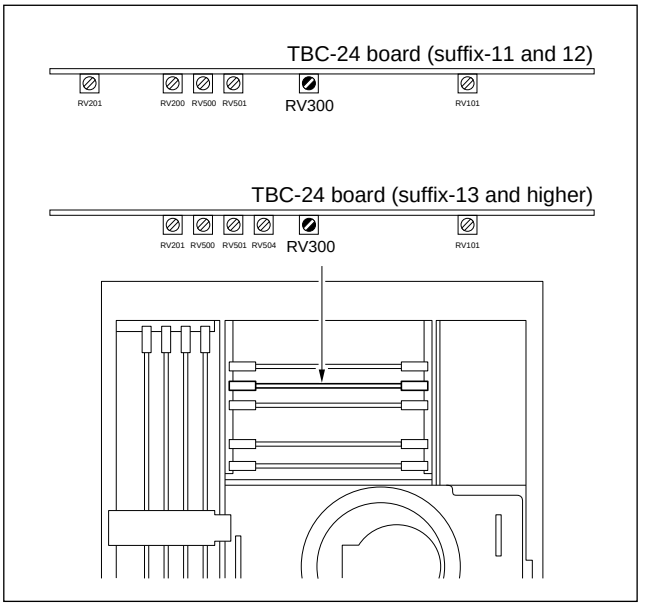
Perform following steps (6) through (9) only when the specification in step (5) is not satisfied.
(6) Playback the burst signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS again.
(7) Enter the maintenance mode, then enter A37 : TBC VR.
(8) The BOWTIE dip point comes closer to the center marker so that the data value of item “SQ Y RZ” is within +1 or −1.
(9) Perform step (5) again.

Data save [to step (14)]:

Perform the data save only when SQ Y RZ’s data value of
A37 : TBC VR is changed.
(10) To exit A37 : TBC VR, push the MENU button on the lower control panel.
(11) Enter A3F : NV-RAM CONTROL, then execute “SAVE ALL ADJUST DATA”.
(12) Check that the message “Save Complete” is displayed on the video monitor.
(13) To exit A3F : NV-RAM CONTROL, push the MENU button once.
(14) To exit the maintenance mode, push the MENU button three times again.
(15) Stop the playback of the alignment tape CR5-1B/CR5-1B PS or eject it.

Note

It is not necessary to eject the alignment tape when perform subsequent “3. TBC Y/C Delay Confirmation”.



RV300 on TBC-24 Board

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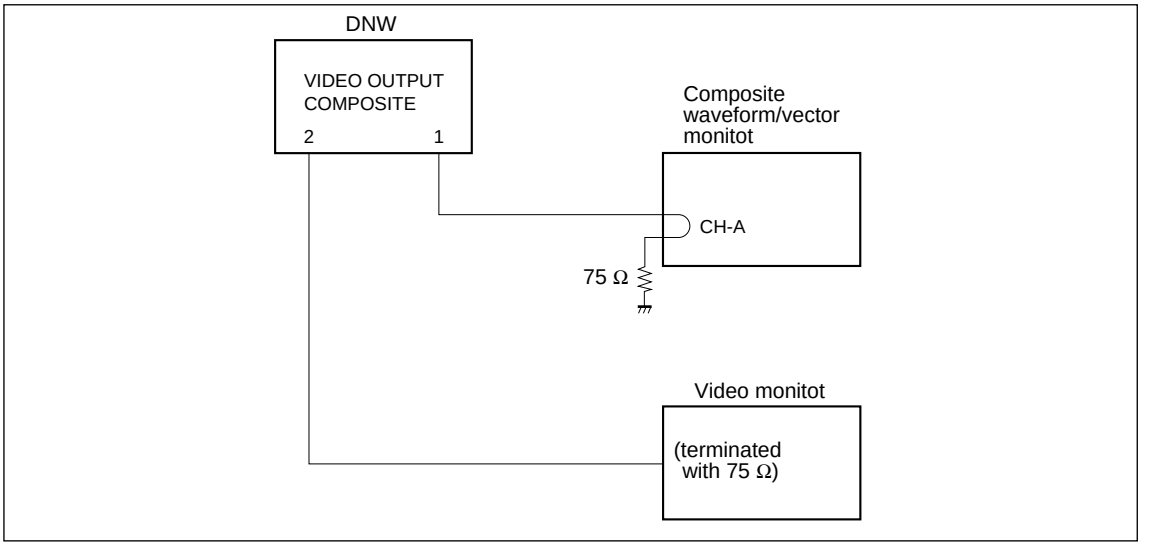
3. TBC Y/C Delay Confirmation

Measuring equipment: composite waveform/vector monitor.

(1) Connect the composite waveform/vector monitor and video monitor as shown below.



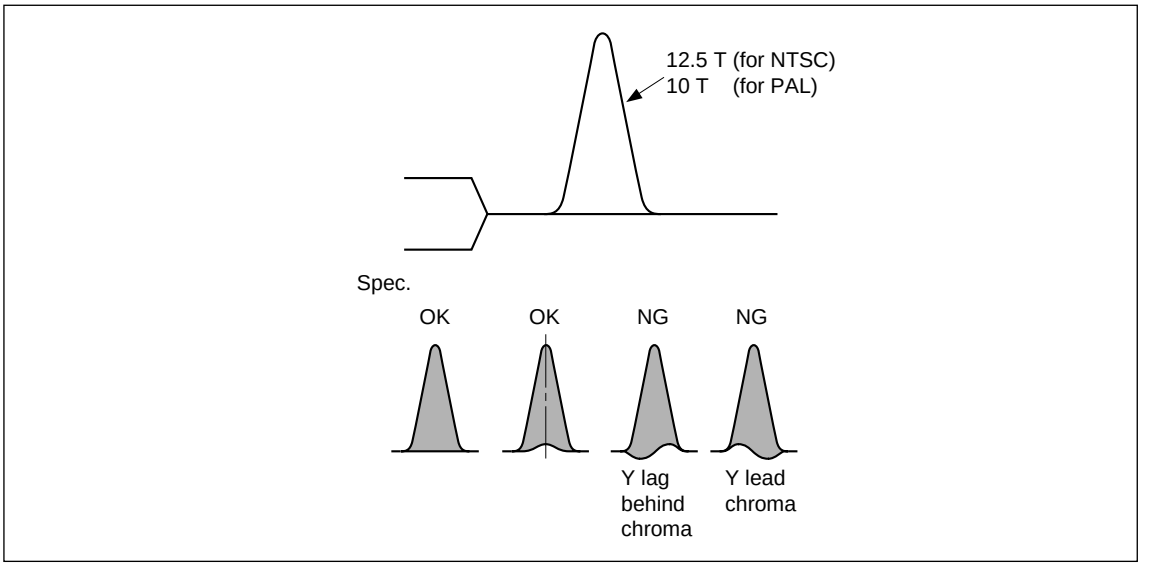
Connection in Y/C Delay Confirmation

C phase confirmation [to step (5)]

(2) Set the composite waveform/vector monitor as follwors:
WAVEFORM mode, SWEEP: 2H, MAG ON, INPIT: CH-A, INT REF
LINE SELECT: 183 to 202 for NTSC/218 to 241 for PAL

(3) Playback the bowtie signal portion (17:00 to 19:00) of the alignment tape CR5-1B or CR5-1B PS. (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)

(4) Observe the 12.5T (PAL: 10T) portion of bowtie signal, confirm that the waveform satisfies the specification.
If the specification is not satisfied, perform steps (6) through (20).



(5) Stop the playback of the alignment tape CR5-1B/CR5-1B PS or eject it.

Note

It is not necessary to eject the alignment tape when perform subsequent “4. VISC Phase Adjustment”.

Perform following steps (6) through (20) when the specification in step (4) is not satisfied.

METAL adjustment [to step (17)]

(6) Playback the bowtie signal portion (17:00 to 19:00) of the alignment tape CR5-1B or CR5-1B PS. (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)

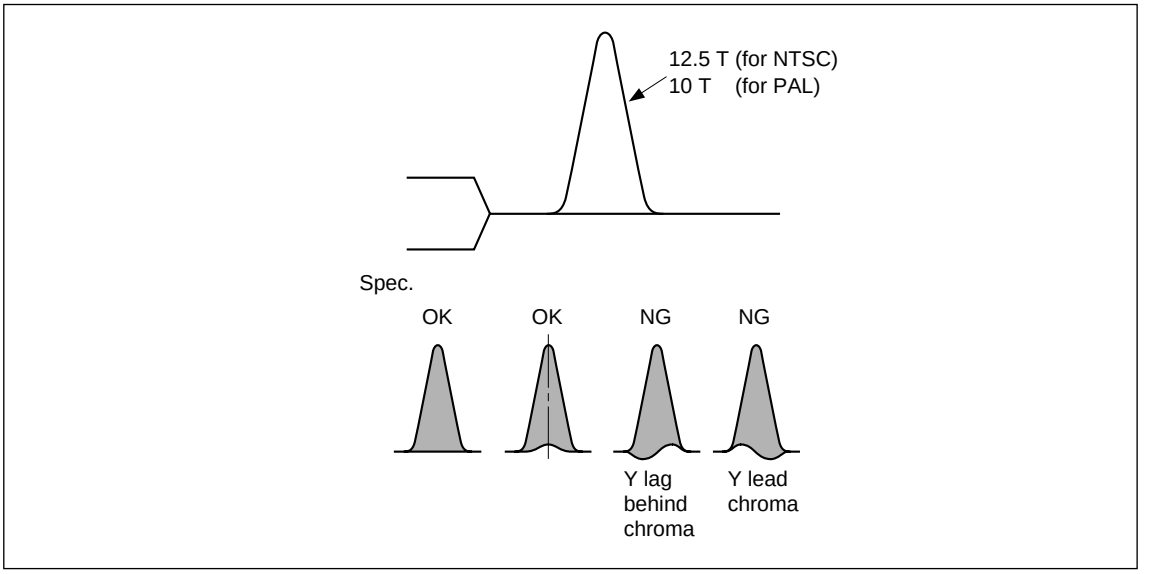
(7) Observe the 12.5T (PAL: 10T) portion of bowtie signal, adjust so that the waveform satisfies the specification.

Adjustment points: Field 1: ⊘RV500/TBC-24(B-1)
Field 2: ⊘RV504/TBC-24(C-1)

If the specification is not satisfied by adjusting RV500, perform steps (8) through (11) after setting RV500 to the mechanical center.

Note

RV504 is not equipped with the board number suffixes 11 and 12 of TBC-24 board. Therefore, adjust RV500 only.



Perform following steps (8) through (11) when the specification in step (7) is not satisfied.

(8) Playback the bowtie signal portion (17:00 to 19:00) of the alignment tape CR5-1B or CR5-1B PS again.

(9) Enter the maintenance mode, then enter A37 : TBC VR.

(10) The data value of item “SQ C RZ” is within +2 or −2.

(11) Perform step (7) again.

Data save [to step (16)]:

Perform the data save only when SQ C RZ’s data value of A37 : TBC VR is changed.

(12) To exit A37 : TBC VR, push the MENU button on the lower control panel.

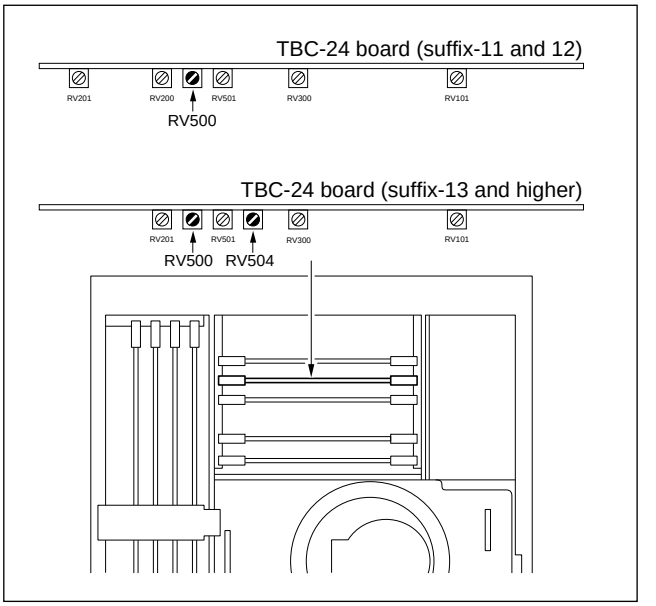
(13) Enter A3F : NV-RAM CONTROL, then execute “SAVE ALL ADJUST DATA”.

(14) Check that the message “Save Complete” is displayed on the video monitor.

(15) To exit A3F : NV-RAM CONTROL, push the MENU button once.

(16) To exit the maintenance mode, push the MENU button three times again.

(17) Eject the alignment tape CR5-1B/CR5-1B PS.

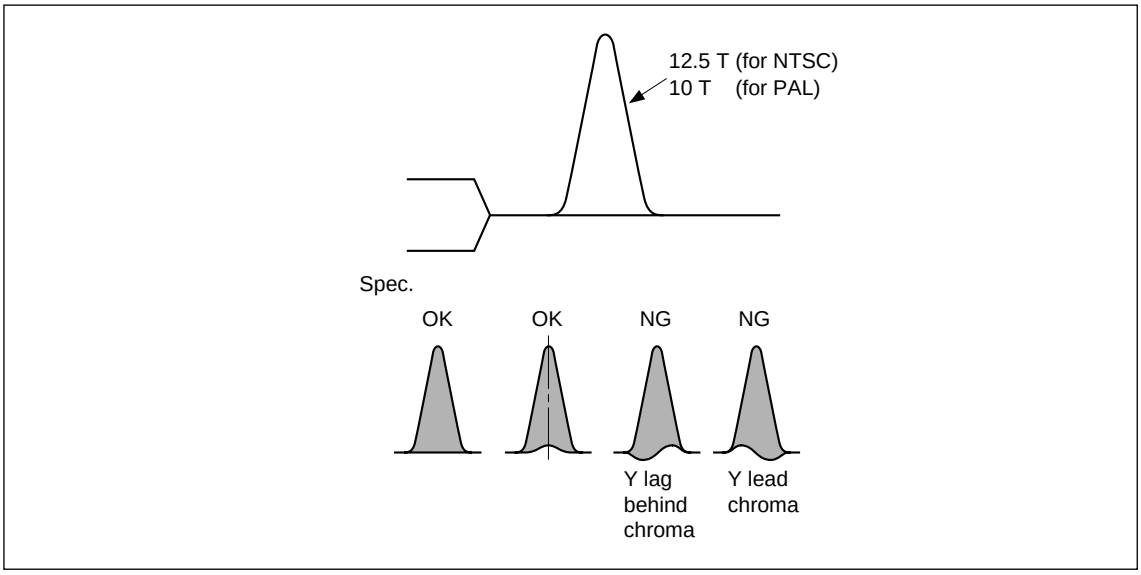


RV500 and RV504 on TBC-24 Board

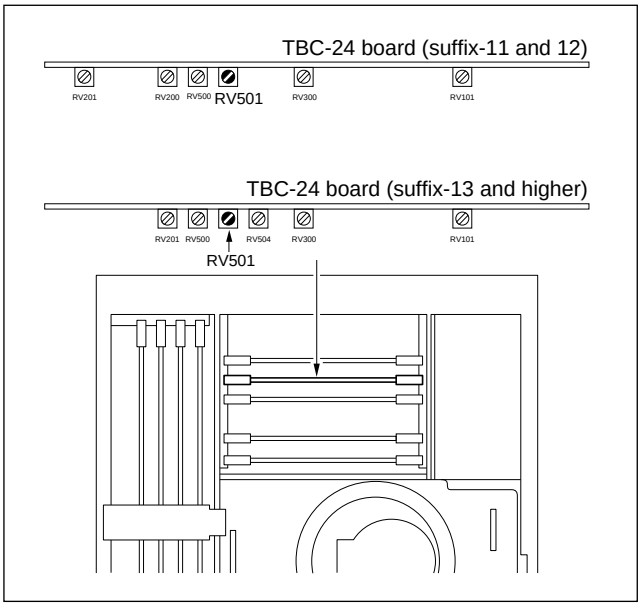
OXIDE adjustment [to step (20)]

(18) Playback the bowtie signal portion (6:00 to 9:00) of the alignment tape CR5-2A or CR5-2A PS. (DNW-A22: CR5-2A, DNW-A22P: CR5-2A PS)

(19) Observe the 12.5T (PAL: 10T) portion of dowtie signal, adjust so that the waveform satisfies the specification.
Adjustment point: ⊘RV501/TBC-24(C-1)



(20) Eject the alignment tape CR5-2A/CR5-2A PS.

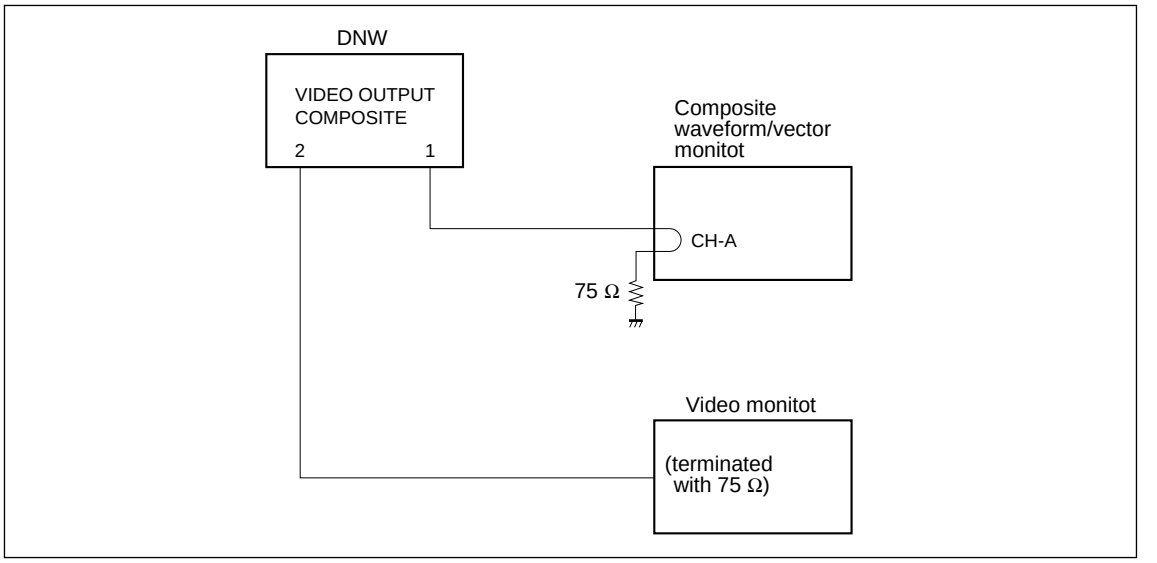


RV501 on TBC-24 Board

4. VISC Phase Adjustment

Measuring equipment: Composite waveform/vector monitor

(1) Connect the composite waveform/vector monitor and video monitor as shown below.



Connection in VISC Phase Adjustment

(2) Set the composite waveform/vector monitor as follows:
WAVEFORM mode, INPUT: CH-A, INT REF, SWEEP: 1 FLD

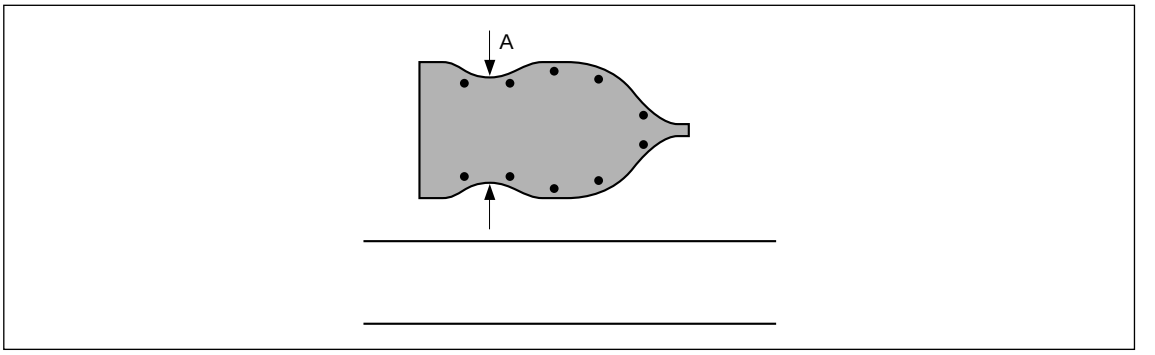
(3) Playback the H sweep signal portion (28:00 to 30:00) of the alignment tape CR5-1B or CR5-1B PS.
(DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)

Note

Continue playing back the alignment tape from here till step (16).
Be sure to perform working of steps (6) through (15) continuously without interval.

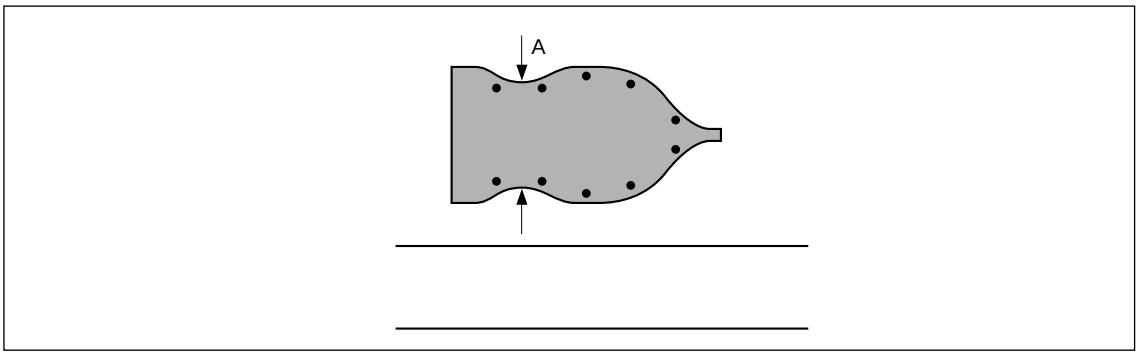
(4) Set the CAPSTAN LOCK switch on the sub control panel as follows, then return it to the 2FD after two seconds.
DNW-A22: 4FD
DNW-A22P: 8FD

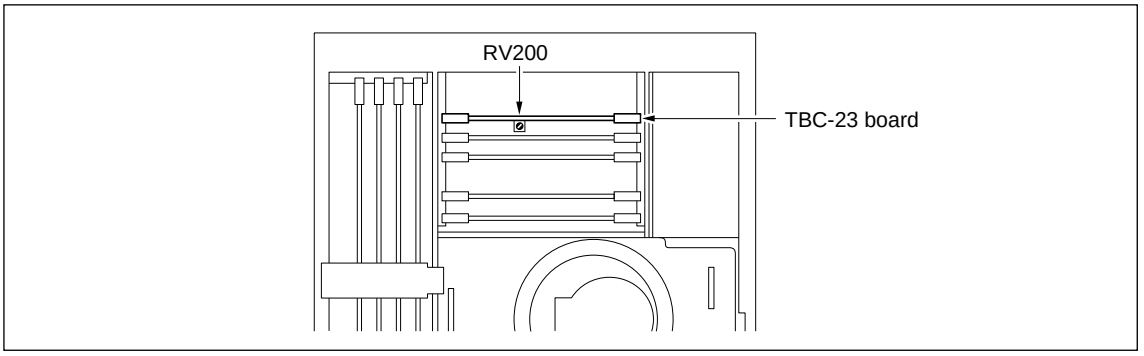
(5) Repeat sequences in STOP and PLAY BACK until the hollow of A portion is maximized.



(6) Set the CAPSTAN LOCK switch on the sub control panel as follows:
DNW-A22: 4FD
DNW-A22P: 8FD

(7) Adjust the hollow of A portion to minimum.
Adjustment point: ⊘RV200/TBC-23(C-1)





6-7. TBC-24 Board Replacement

The electrical adjustments are essential after the TBC-24 board is replaced.
To perform the electrical adjustment, the following equipment and fixtures are required.

Note

Some adjustments are different according to the board number suffix (XX of 1-648-542-XX) of TBC-24 board.
Be sure to confirm the suffix of board number before replacement. The board number is indicated on the left margin (A-6) of A side of TBC-24 board.

- Composite waveform/vector monitor
  For DNW-A22: TEKTRONIX 1780R or equivalent (With LINE SELECT)
  For DNW-A22P: TEKTRONIX 1781R or equivalent (With LINE SELECT)
- Composite video monitor
- Extension board: EX-377 (SONY parts No. J-6269-810-A)
- 75 Ω terminators (1 piece)
- Cleaning tape: BCT-5CLN (SONY standard products)
- Alignment tapes
  For DNW-A22: CR5-1B (SONY parts No. 8-960-096-41) and CR5-2A (SONY parts No. 8-960-097-44)
  For DNW-A22P: CR5-1B PS (SONY parts No. 8-960-096-91) and CR5-2A PS (SONY parts No. 8-960-098-44)

6-7-1. Replacement Procedure

Note

Turn off the POWER switch before starting the replacement.

(1) Remove the upper lid, board retainer (S), and TBC-24 (original) board.
(Refer to “6-1-3. Plug-in Board Pulling out/Insertion”.)
(2) Disconnect the one disconnected harness (that it connected TBC-24 board and TBC-23 board) from TBC-23 board.
(3) After inserting the extension board EX-377 to the slot for TBC-24 board, and then connect a new TBC-24 board to the extension board.
(4) Connect the extension harness to CN1 on TBC-24 (new) board and CN1 on TBC-23 board.
(5) Clean the video heads by cleaning tape.
(Refer to “5-2-1. Cleaning by Cleaning Tape”.)
(6) Perform the electrical adjustments (Section 6-7-2).

Note

Remove the extension board and extension harness in some steps of the electrical adjustment.

(7) For DNW-A22 only
Return the ITEM-709 and ITEM-713 of setup extend menu to previous settings after the electrical adjustments are completed.
(8) Return the states of S1100-1 on the SS-63 board and control panels to their previous states.
(9) Turn off the power.
(10) Install the board retainer (S) and upper lid.
(Refer to “6-1-3. Plug-in Board Pulling out/Insertion”.)

6-7-2. Electrical Adjustments

Adjustment Items

No.	Item		Adjustment point	Notes
0	Preparation			
1	Composite output level adjustment			
		METAL Y	⊘RV101/TBC-24	VIDEO OUTPUT COMPOSITE 1
		METAL C	⊘RV201/TBC-24	
		OXIDE Y	⊘RV504/DM-89	
		OXIDE C	⊘RV704/DM-89 (DNW-A22P only)	
2	A/D clamp DC level adjustment (Note 1)			
		C	⊘RV202/TBC-24	TP202/TBC-24
		Y	⊘RV102/TBC-24	TP102/TBC-24
3	VCO lock-in range adjustment			
		Y	⊘RV404/TBC-24 (Note 2)	RV404/TBC-24
			⊘LV401/TBC-24	TP403/TBC-24
		C	⊘RV604/TBC-24 (Note 2)	RV604/TBC-24
			⊘LV601/TBC-24	TP603/TBC-24
4	FAST VCO tracking adjustment			
		Gain	⊘RV400/TBC-24 (Note 3)	RV400/TBC-24
		Offset	⊘RV402/TBC-24 (Note 4)	Video monitor
5	PB video phase adjustment		⊘RV300/TBC-24 A37: TBC VR: SQ Y RZ (Note 5)	VIDEO OUTPUT COMPOSITE 1
6	TBC Y/C delay rough adjustment			
		METAL	⊘RV502/TBC-24 ⊘RV503/TBC-24 ⊘RV500/TBC-24 A37: TBC VR: SQ Y RZ (Note 6) ⊘RV504/TBC-24 (Note 7)	VIDEO OUTPUT COMPOSITE 1
7	Impact error offset adjustment			
		Y	⊘RV401/TBC-24	Video monitor
		C	⊘RV601/TBC-24	
8	TBC Y/C delay adjustment			
		METAL	⊘RV500/TBC-24 ⊘RV504/TBC-24 (Note 7)	VIDEO OUTPUT COMPOSITE 1
		OXIDE	⊘RV501/TBC-24	VIDEO OUTPUT COMPOSITE 1

Note 1: Their RV102 and RV202 are equipped with the board number suffixes 11 and 12 of TBC-24 board. Therefore, the electrical adjustments are essential to them.

Note 2: Their RV404 and RV604 are equipped with the board number suffixes 11 and 12 of TBC-24 board.

Note 3: This RV400 is equipped with the board number suffixes 11, 12, and 13 of TBC-24 board.

Note 4: This RV402 is not equipped with the board number suffixes 14 and higher of TBC-24 board for DNW-A22P.

Note 5: If the specification is not satisfied by RV300, change the data of A37: TBC VR: SQ Y RZ.

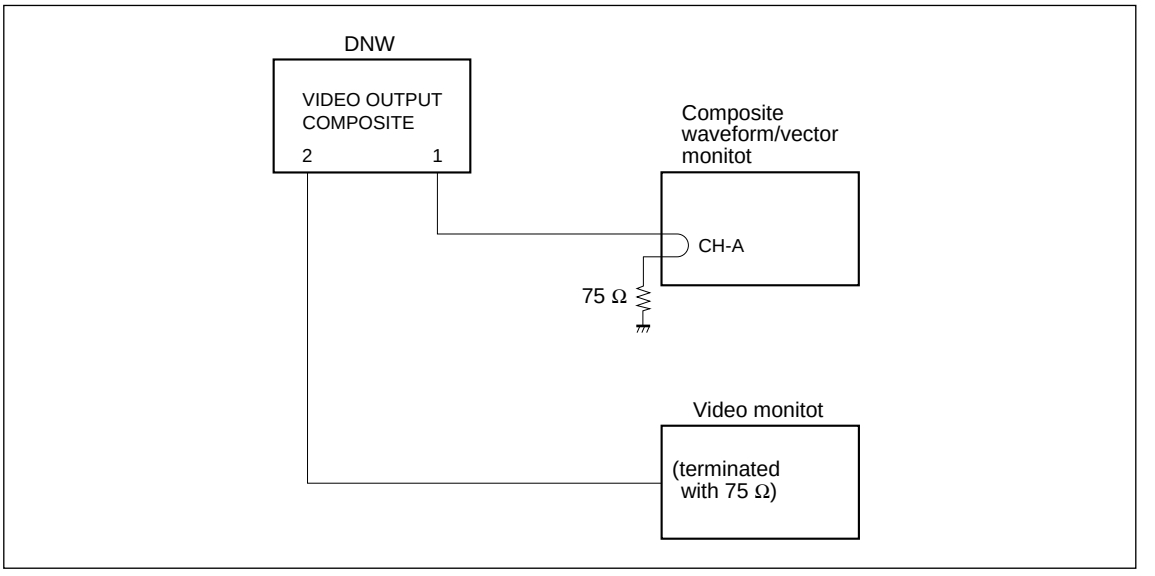
Note 6: If the specification is not satisfied by RV500, change the data of A37: TBC VR: SQ C RZ.

Note 7: This RV504 is equipped with the board number suffixes 13 and higher of TBC-24 board.

0. Preparation

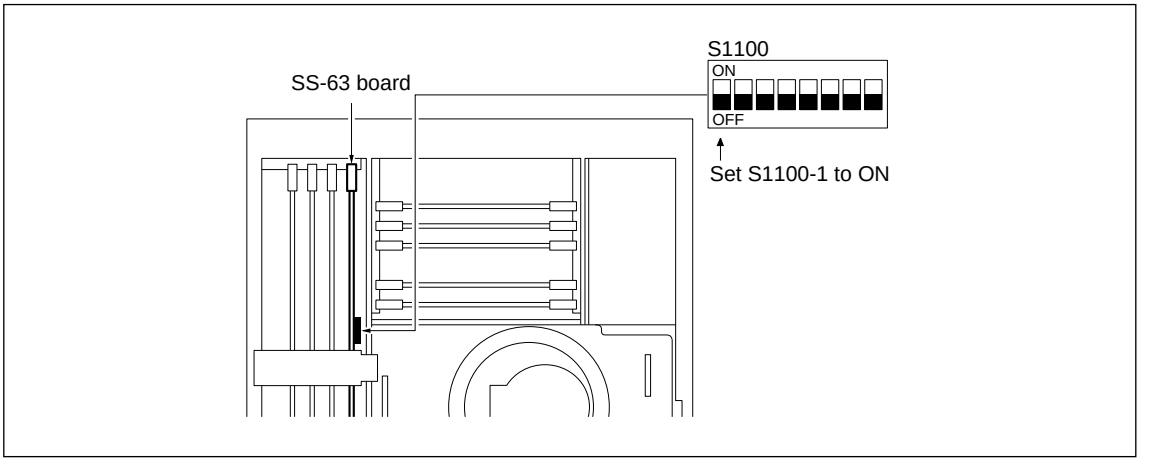
Connection

Connect the composite waveform/vector monitor and video monitor as shown below.



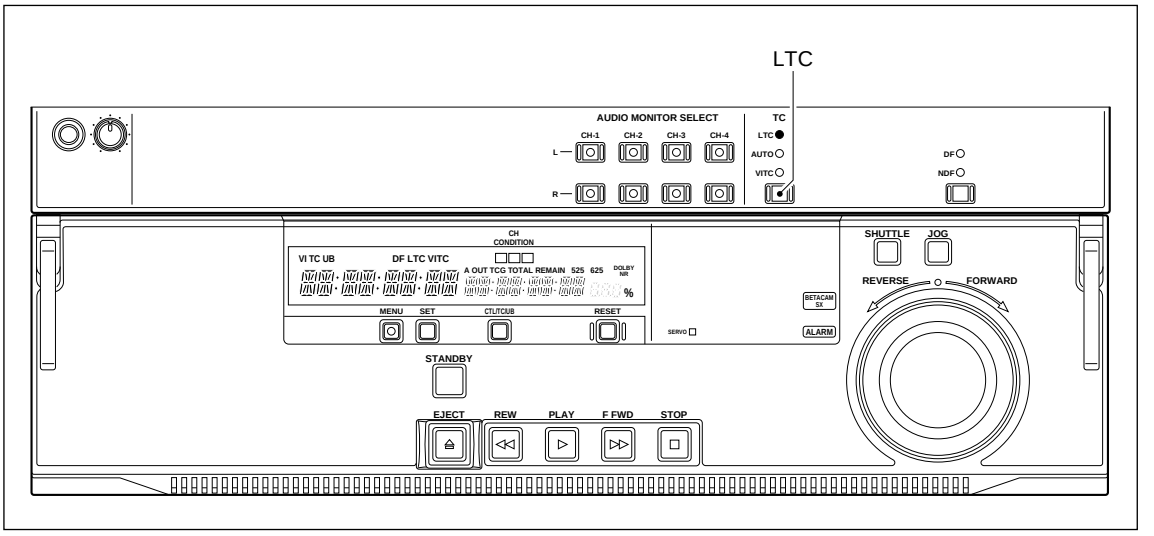
Setting of DNW

(1) Set S1100-1 on SS-63 board to ON to treat the extended menu of the setup menu.

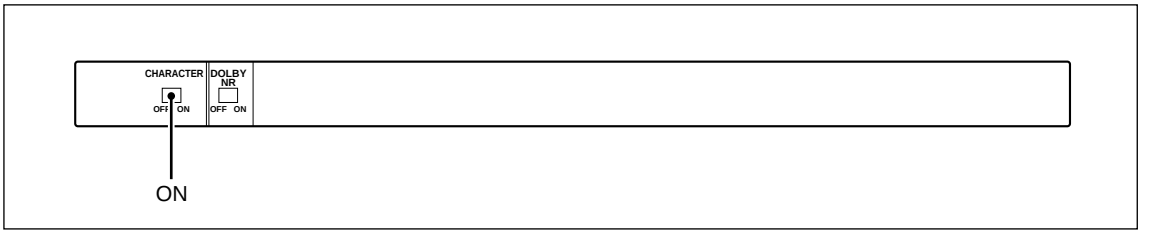


S1100 of SS-63 Board

(2) Turn on the power, and set each control panel as shown below.



Upper/Lower Control Panels



Sub Control Panel

(3) Setting of the setup extend menu

- For DNW-A22
  Set the SUB-ITEMs of ITEM-709 and ITEM-713 as shown below.
  After adjustments are completed, return the SUB-ITEMs to their previous settings.

ITEM	SUB-ITEM	Setting	Previous setting (fill up)
709 : CAV LEVEL FORMAT	1. OUTPUT CAV LEVEL	B-CAM	
713 : VIDEO SETUP REFERENCE LEVEL	0. MASTER LEVEL	0.0%	
	3. BETACAM PB LEVEL	MSTER	
	4. OUTPUT LEVEL	MSTER	

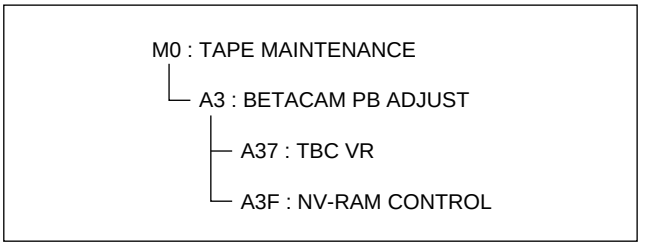
- For DNW-A22P
  None.

For Maintenance Mode

Describes the operation of the maintenance mode as follows:

Notes

The sub mode and menus of the maintenance mode that are used after replacing the TBC-23 board are as shown below.



• How to enter the maintenance mode

(1) Push S1101 (G-1) on the SS-63 board.

• How to enter the next menu (mode)

(1) Push the JOG button once.
= **Search dial enters into the JOG mode.**
(2) To set the cursor (∗ mark) to the desired menu (mode), turn the search dial.
(3) Push the SET button once.

• How to exit the current menu (mode)

(1) Push the MENU button once.

Note

If the MENU button is pushed several times, the maintenance mode exits.

• How to change the data value

(1) To set the cursor (∗ mark) to the item, turn the search dial.
(2) Turn the search dial slowly while pressing the JOG button. = **Data value changes.**
REVERSE direction: decrease the data value (00's next is FF)
FORWARD direction: increase the data value (FF's next is 00)

Note

During adjustment, change the rotational direction of the search dial according to the change of waveform that is displayed on the measuring equipment.

• How to save the data

(1) To set the cursor (∗ mark) to A3F : NV-RAM CONTROL, turn the search dial.
(2) Push the SET button once.
(3) To set the cursor (∗ mark) to "SAVE ALL ADJUST DATA", turn the search dial.
(4) Push the SET button once.

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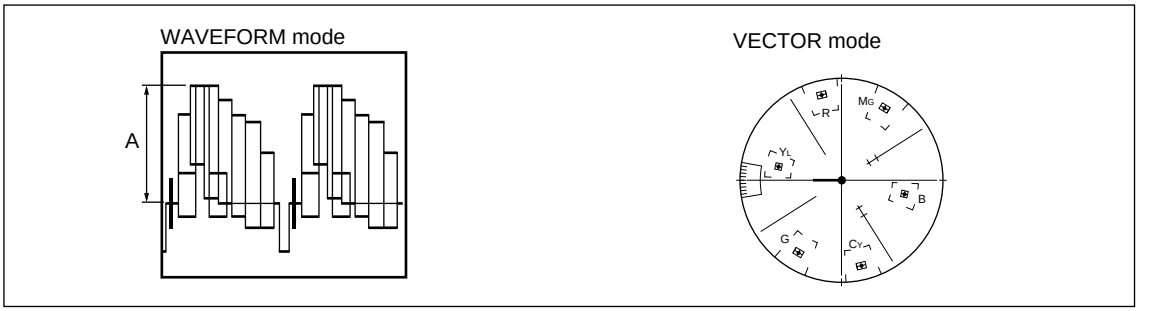
1. Composite Output Level Adjustment

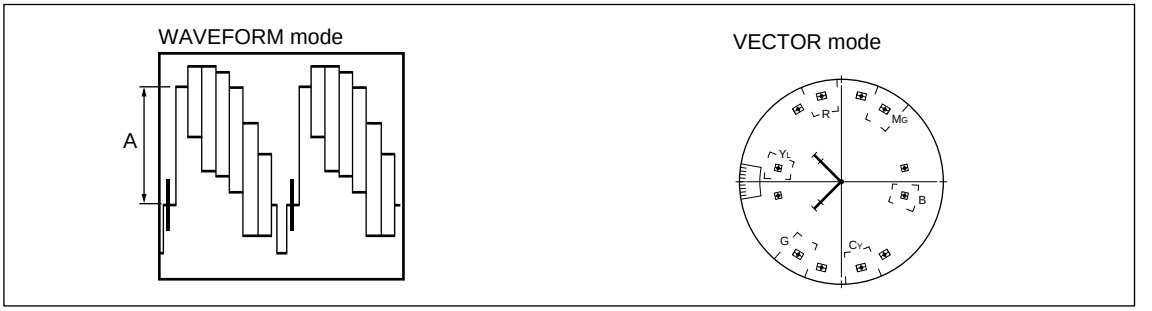
Measuring equipment: Composite waveform/vector monitor (terminated with 75 Ω)

(1) METAL level adjustment
Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS, and perform the adjustment of each composite signal level.
(DNW-A22 CR5-1B, DNW-A22P: CR5-1B PS)

Equipment setting	Specifications	Adjustment point
WAVEFORM mode	DNW-A22: A = 714 ±7 mV (A = 100 ±1 IRE) DNW-A22P: A = 700 ±7 mV	⊘RV101/TBC-24(F-1)
VECTOR mode	Inside the corresponding frames (DP: ±2.5°, DG: ±2.5%)	⊘RV201/TBC-24(A/B-1)

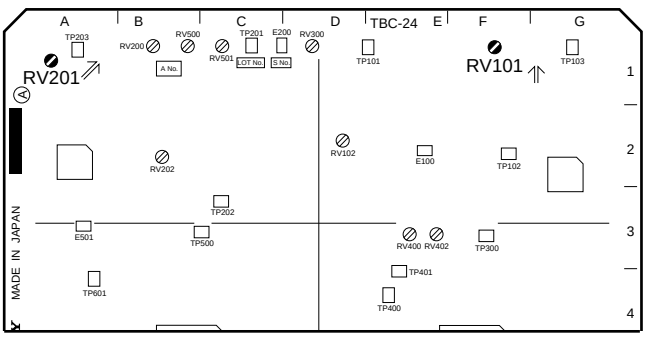


DNW-A22

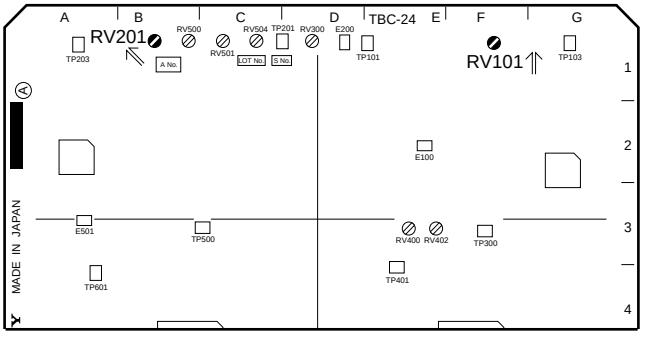


DNW-A22P

(2) Eject the alignment tape CR5-1B/CR5-1B PS.



TBC-24 Board (A Side) (Suffix-11 and -12)



TBC-24 Board (A Side) (Suffix-13 and higher)

(3) OXIDE level confirmation

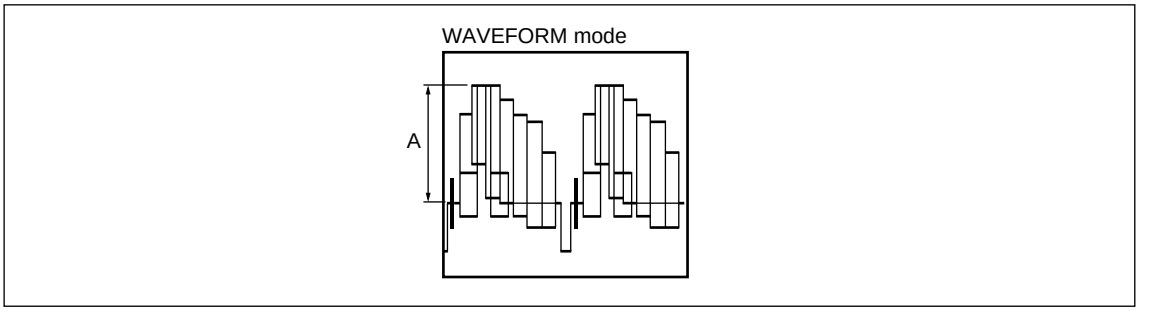
Playback the 75% color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS, and perform the check of each composite signal level. If the specification is not satisfied, perform the adjustment of the composite output level.

(DNW-A22: CR5-2A, DNW-A22P: CR5-2A PS)

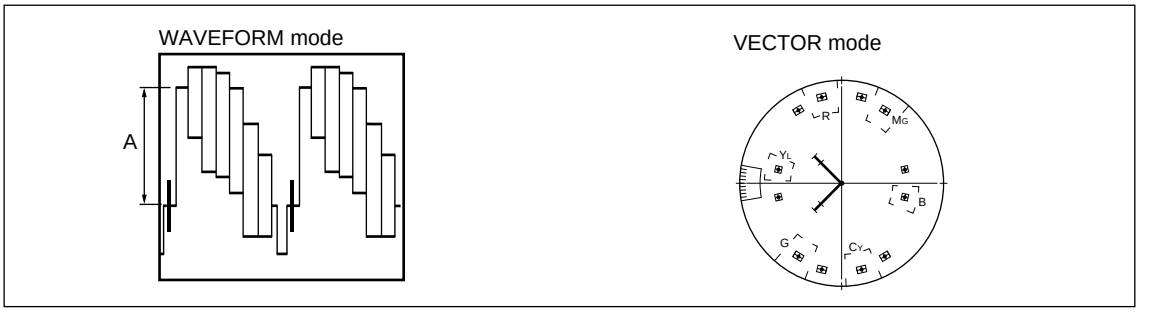
Note

For DNW-A22, perform the check (adjustment) for Y signal only.

Equipment setting	Specifications	Adjustment point
WAVEFORM mode	DNW-A22: A = 714 ±7 mV (A = 100 ±1 IRE) DNW-A22P: A = 700 ±7 mV	⊘RV504/DM-89(F-1)
VECTOR mode	Inside the corresponding frames (DP: ±2.5°, DG: ±2.5%)	⊘RV704/DM-89(B-1) DNW-A22P only

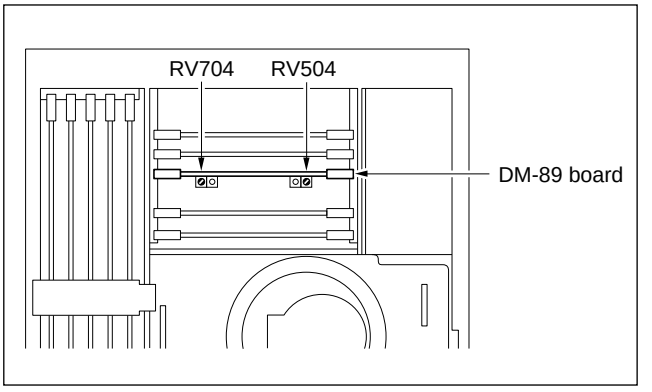


DNW-A22



DNW-A22P

(4) Eject the alignment tape CR5-2A/CR5-2A PS.



RV504 and RV704 on DM-89 Board

Note

RV504 and RV704 on DM-89 board are possible to adjust without using the extension board.

2. A/D Clamp DC Level Adjustment

Note

"A/D Clamp DC Level Adjustment" is needed for TBC-24 board of the board numbers 1-648-542-11 and 1-648-542-12.

Measuring equipment: Oscilloscope

(1) When the alignment tape is inserted to DNW, eject it.
(2) Connect and set the oscilloscope as follows:
CH-1: TP202/TBC-24(C-3), 500 mV/DIV, 10 µs/DIV, GND: E200/TBC-24(C-1)
CH-2: TP102/TBC-24(F-2), 500 mV/DIV, GND: E100/TBC-24(E-2)
Display: CH-1
(3) Turn off the power of DNW, then wait for 1 minute.
(4) DC level measurement for C
Measure the DC level on the oscilloscope's CH-1 (TP202) just after turning on the power.
(5) DC level measurement for Y
Measure the DC level on the oscilloscope's CH-2 (TP102) after change the display mode of the oscilloscope to CH-2.

Measurement point	Measuring value (fill up)	Note
CH-1: TP202/TBC-24(C-3)		C
CH-2: TP102/TBC-24(F-2)		Y

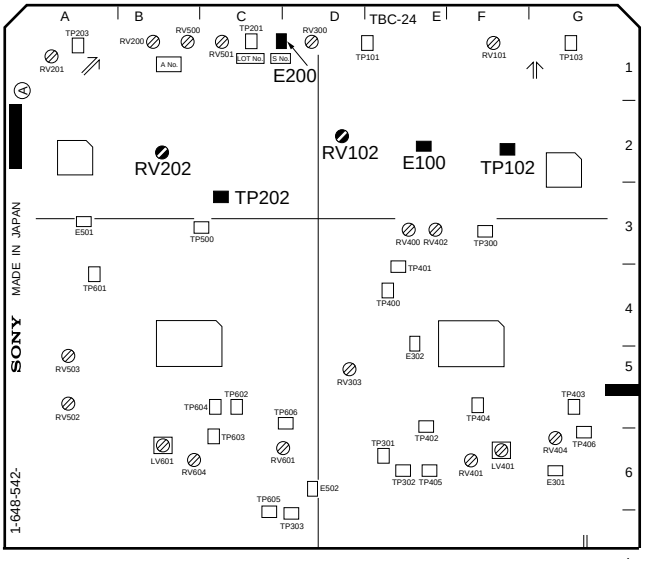
(6) Adjustments
Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS, and adjust the DC voltage level of the following measurement points as identical to measured voltage in steps (4) and (5). (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)

Measurement point	Adjustment point	Note
CH-1: TP202/TBC-24(C-3)	⊘RV202/TBC-24(B-2)	C
CH-2: TP102/TBC-24(F-2)	⊘RV102/TBC-24(D-2)	Y

(7) Stop the playback of the alignment tape CR5-1B/CR5-1B PS or eject it.

Note

It is not necessary to eject the alignment tape when perform subsequent "3. VCO Lock-in Range Adjustment.



TBC-24 Board (A Side) (Suffix-11 and -12)

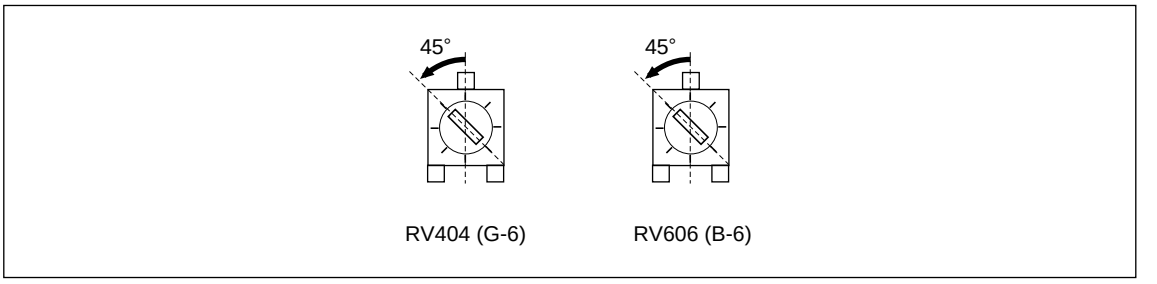
3. VCO Lock-in Range Adjustment

Measuring equipment: Oscilloscope

(1) Set the following RVs on TBC-24 board to each specified position as shown below.

Note

Perform step (1) only when the board number suffix is 11 or 12.



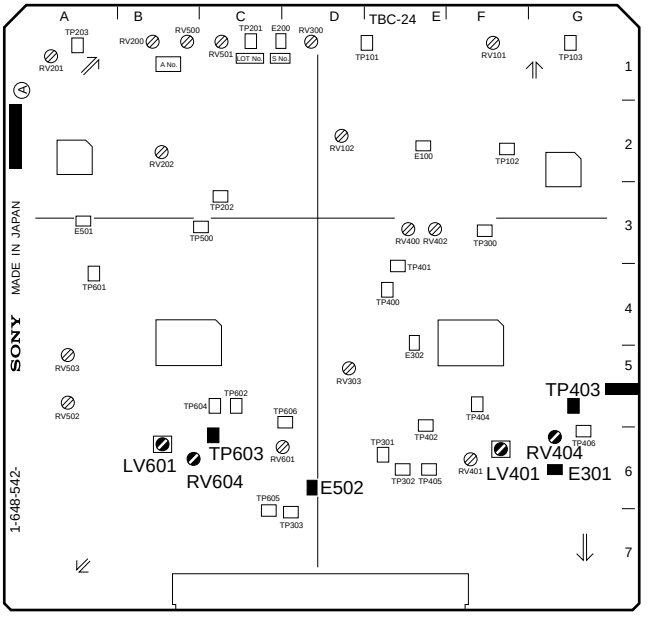
(2) Connect and set the oscilloscope as follows:
CH-1: TP403/TBC-24(G-5), DC 1 V/DIV, GND: E301/TBC24 (G-6)
CH-2: TP603/TBC-24(C-6), DC 1 V/DIV, GND: E502/TBC24 (D-6)

(3) Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS, then adjust each DC level of Y side and C side.
(DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)
Adjustment points: Y(CH-1) side: ⊘LV401/TBC-24(F-6)
C(CH-2) side: ⊘LV601/TBC-24(B-6)
Specifications (Y and C) : 2.0 ±0.2 V dc

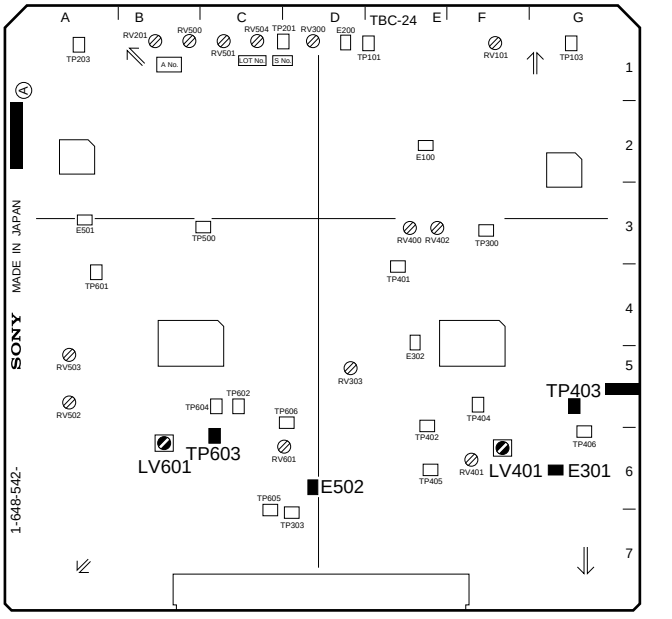
(4) Stop the playback of the alignment tape CR5-1B/CR5-1B PS or eject it.

Note

It is not necessary to eject the alignment tape when perform subsequent “4. FAST VCO Tracking Adjustment”.



TBC-24 Board (A Side) (Suffix-11 and -12)



TBC-24 Board (A Side) (Suffix-13 and higher)

4. FAST VCO Tracking Adjustment

Measuring equipment: Video monitor

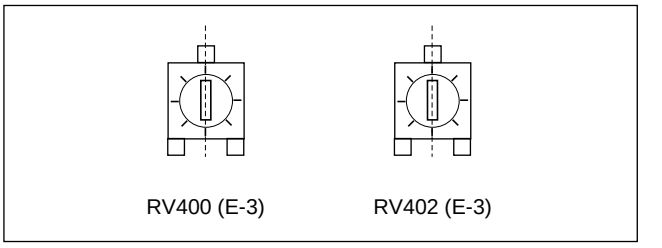
(1) Set the following RVs on TBC-24 board to each specified position as shown below.

Note

Specified RV(s) are not equipped according to the mode and the board number suffix of TBC-24 board.

Suffix	RV400	RV402
11, 12, 13	○	○
14 and higher	×	○: DNW-A22 ×: DNW-A22P

○: With RV ×: Without RV



(2) Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS in the REW and FF mode, and confirm that the picture (color-bar) displays on the video monitor. (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)

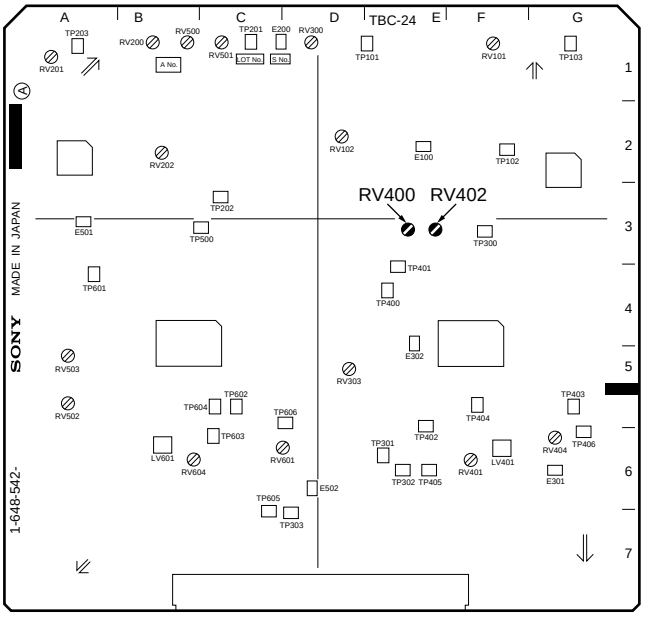
(3) Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B/CR5-1B PS in the SHUTTLE −24 times speed, then confirm that vertical lines of color-bar on the video monitor displays straight.
In DNW-A22 only, if vertical lines are not straight, adjust RV402.

(4) Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B/CR5-1B PS in the range from VARIABLE −10 times speed to fastest + speed, then confirm that vertical lines of color-bar on the video monitor displays straight.
In DNW-A22 only, if vertical lines are not straight, adjust RV402.

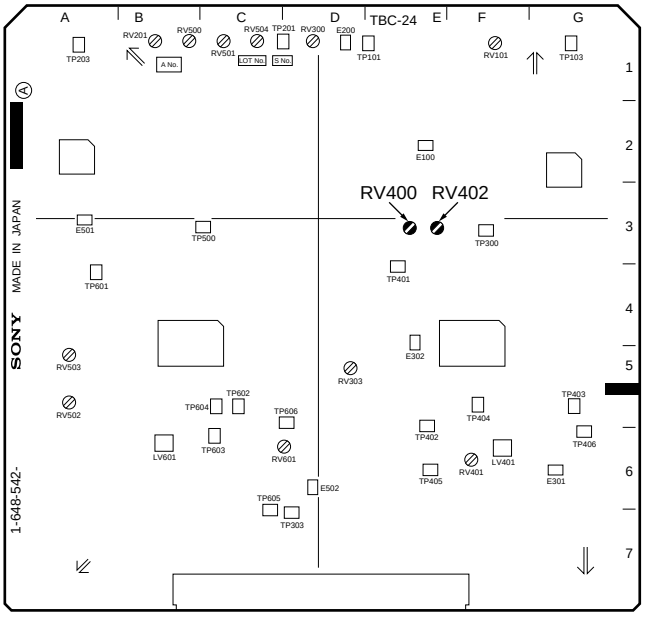
(5) Eject the playback of the alignment tape CR5-1B/CR5-1B PS.

(6) Playback the color-bar signal portion (0:00 to 3:00) of the alignment tape CR5-2A or CR5-2A PS in the REW and FF mode, and confirm that the picture (color-bar) displays on the video monitor. (DNW-A22: CR5-2A, DNW-A22P: CR5-2A PS)

(7) Eject the alignment tape CR5-2A/CR5-2A PS.



TBC-24 Board (A Side) (Suffix-11 and -12)



TBC-24 Board (A Side) (Suffix-13 and higher)

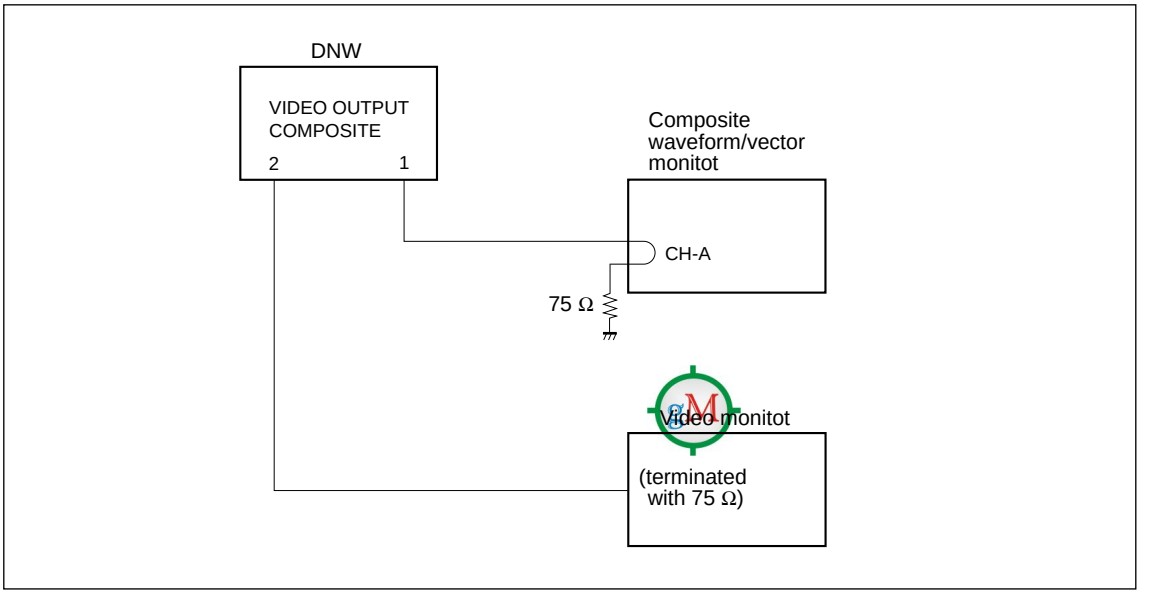
5. PB Video Phase Adjustment

Note

Perform this adjustment without using the extension board.

Measuring equipment: Refer to next figure.

(1) Turn off the power of DNW.
(2) Remove the TBC-24 board from the extension board, then pull out the extension board.
(3) Install the TBC-24 board to DNW.
(4) Turn on the power.
(5) Connect the composite waveform/vector monirtor and video monitor as shown below.



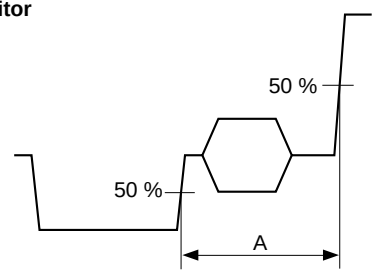
Connection in PB Video Phase Adjustment

Y phase confirmation [to step (19)]

(6) Set the composite waveform/vector monitor as follows:
WAVEFORM mode, SWEEP: 2H, MAG ON, INPUT: CH-A, INT REF
LINE SELECT: 183 to 202 for NTSC
218 to 241 for PAL
(7) Display the BURST signal part of CH-A side on the composite waveform/vector monitor.
(8) Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS.
(DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)

(9) Confirm that time between the 50% position at rising ede of H SYNC signal and the 50% position at the rising edge of while signal portion.
Adjustment point: ⊘RV300/TBC-24(D-1)
Specifications: A = 5.2 ±0.1 µs
If the specification is not satisfied by adjustment, perform steps (10) through (13) after setting RV300 to the mechanical center.

Composite waveform/vector monitor



Perform following steps (10) through (13) only when the specification in step (9) is not satisfied.

(10) Playback the color-bar signal portion (14:00 to 17:00) of the alignment tape CR5-1B or CR5-1B PS again.
(11) Enter the maintenance mode, then enter A37 : TBC VR.
(12) The BOWTIE dip point comes closer to the center marker so that the data value of item “SQ Y RZ” is within +1 or −1.
(13) Perform step (9) again.

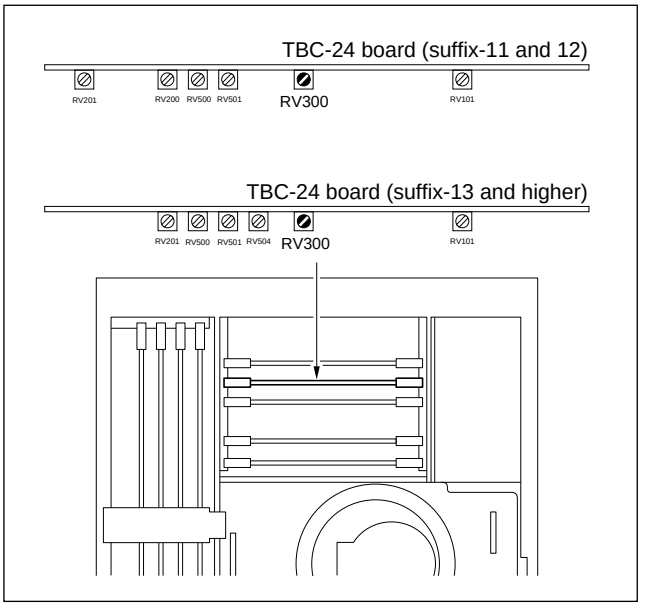
Data save [to step (27)]:

Perform the data save only when SQ Y RZ’s data value of A37 : TBC VR is changed.

(14) To exit A37 : TBC VR, push the MENU button on the lower control panel.
(15) Enter A3F : NV-RAM CONTROL, then execute “SAVE ALL ADJUST DATA”.
(16) Check that the message “Save Complete” is displayed on the video monitor.
(17) To exit A3F : NV-RAM CONTROL, push the MENU button once.
(18) To exit the maintenance mode, push the MENU button three times again.
(19) Stop the playback of the alignment tape CR5-1B/ CR5-1B PS or eject it.

Note

It is not necessary to eject the alignment tape when perform subsequent “6. TBC Y/C Delay Rough Adjustment”.



RV300 on TBC-24 Board

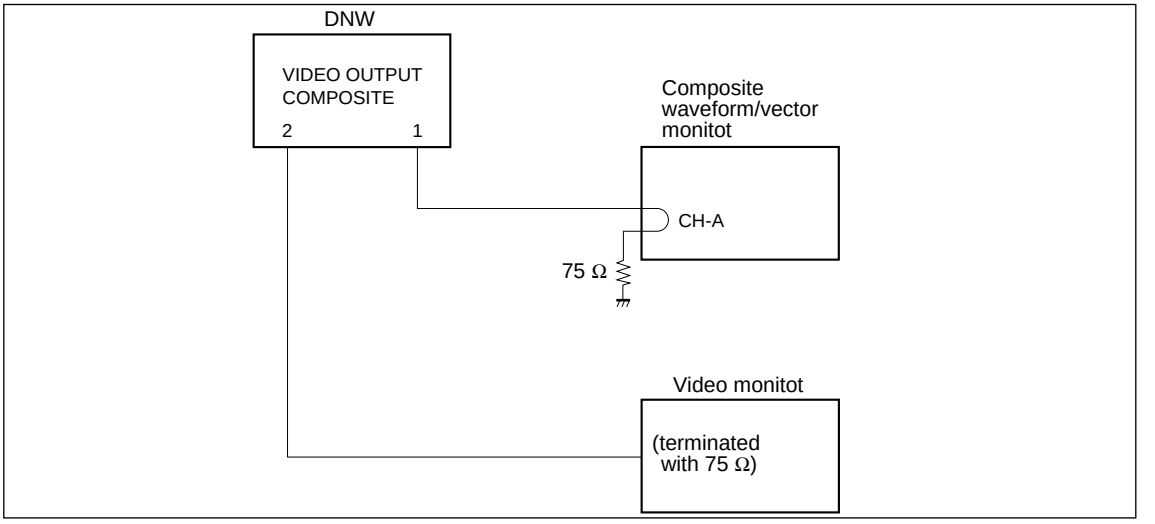
6. TBC Y/C Delay Rough Adjustment

Measuring equipment: Composite waveform/vector monitor

(1) Turn off the power of DNW.
(2) Extend the TBC-24 board with the extension board.
(3) Turn on the power.
(4) Connect the composite/waveform/vector monitor and video monitor as shown below.

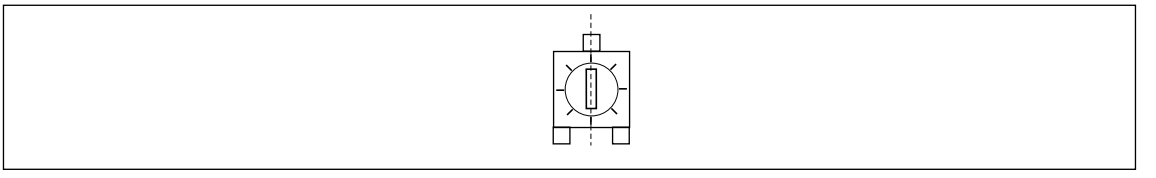
Note

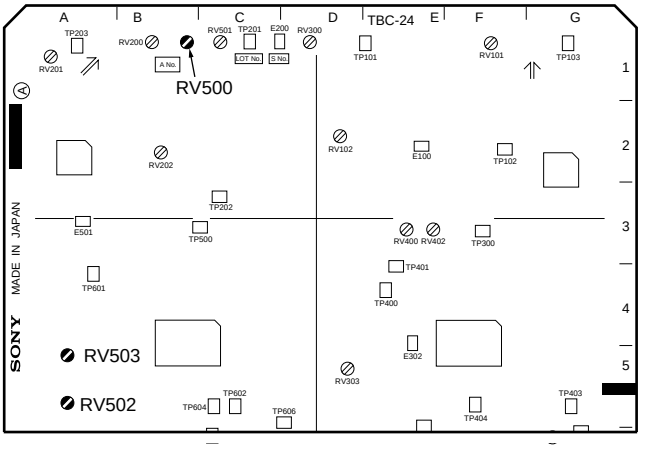
Do not change the connection until “8. TBC Y/C Delay Adjustment” is finished.



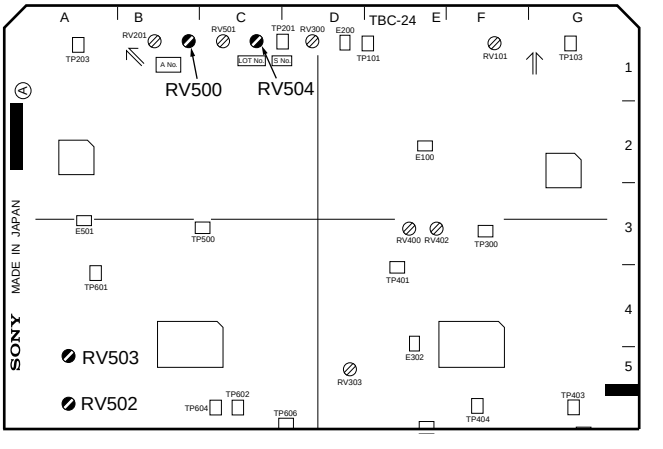
Connection in Y/C Delay Adjustment

(5) Set the composite waveform/vector monitor as follows:
WAVEFORM mode, INPUT: CH-A, INT REF, SWEEP : 2 H, MAG: ON
LINE SELECT: 183 to 202 for NTSC/218 to 241 for PAL
(6) Set RV502 (A-5) on TBC-24 board to the specified position as shown below.





TBC-24 Board (A Side) (Suffix-11 and -12)

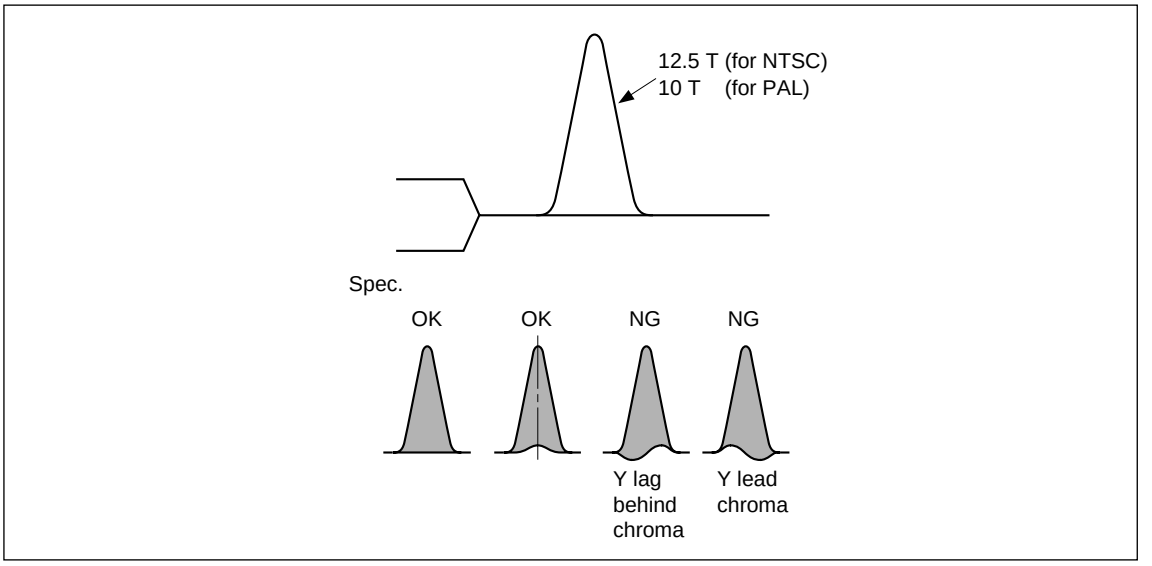


TBC-24 Board (A Side) (Suffix-13 and Higher)

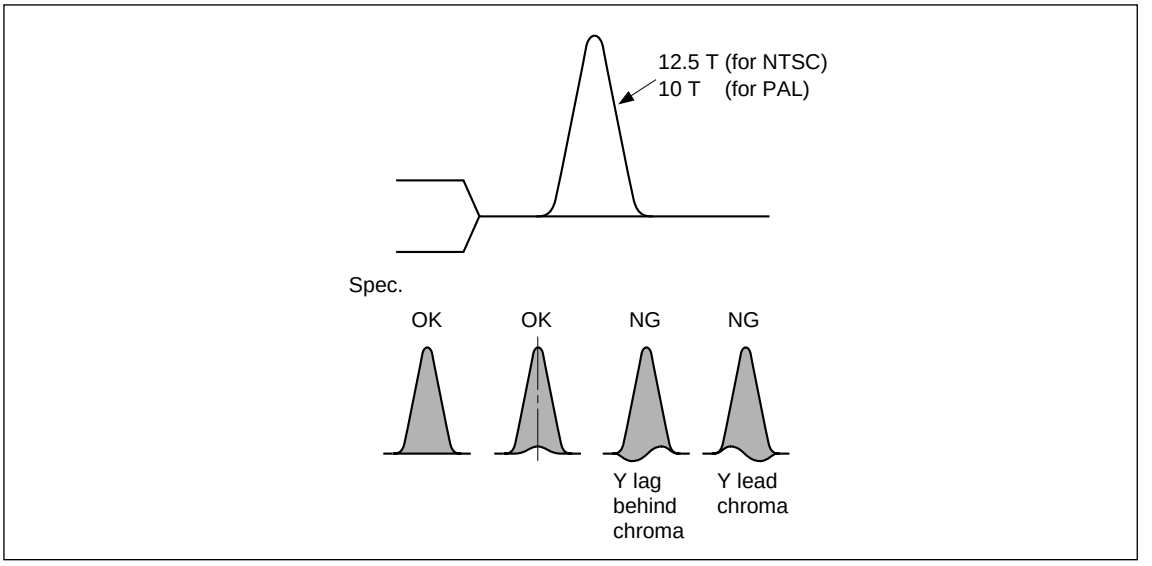
METAL adjustment [to step (19)]

(7) Playback the bowtie signal portion (17:00 to 19:00) of the alignment tape CR5-1B or CR5-1B PS. (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)

(8) Observe the 12.5T (PAL: 10T) portion of bowtie signal, adjust so that the waveform satisfies the specification.
Adjustment point: ⊘RV503/TBC-24(A-5)



(9) Observe the 12.5T (PAL: 10T) portion of bowtie signal, adjust so that the waveform satisfies the specification.
Adjustment points: Field 1: ⊘RV500/TBC-24(B-1)
Field 2: ⊘RV504/TBC-24(C-1)



If the specification is not satisfied by adjusting RV500, perform steps (10) through (13) after setting RV500 to the mechanical center.

Note

RV504 is not equipped with the board number suffixes 11 and 12 of TBC-24 board.
Therefore, adjust RV500 only.

Perform following steps (10) through (13) when the specification in step (9) is not satisfied.

(10) Playback the bowtie signal portion (17:00 to 19:00) of the alignment tape CR5-1B or CR5-1B PS again.
(11) Enter the maintenance mode, then enter A37 : TBC VR.
(12) The data value of item “SQ C RZ” is within +2 or −2.
(13) Perform step (9) again.

Data save [to step (18)]:

Perform the data save only when SQ C RZ’s data value of A37 : TBC VR is changed.

(14) To exit A37 : TBC VR, push the MENU button on the lower control panel.
(15) Enter A3F : NV-RAM CONTROL, then execute “SAVE ALL ADJUST DATA”.
(16) Check that the message “Save Complete” is displayed on the video monitor.
(17) To exit A3F : NV-RAM CONTROL, push the MENU button once.
(18) To exit the maintenance mode, push the MENU button three times again.

(19) Stop the playback of the alignment tape CR5-1B/CR5-1B PS or eject it.

Note

It is not necessary to eject the alignment tape when perform subsequent “7. Impact Error Offset Adjustment”.

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7. Impact Error Offset Adjustment

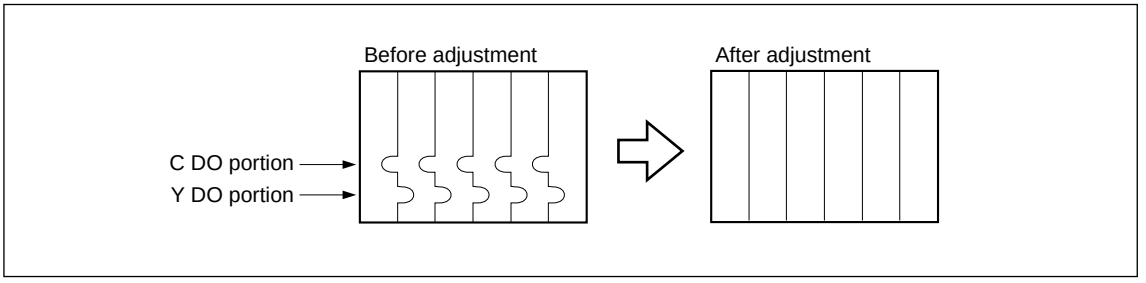
Measuring equipment: Video monitor

(1) Playback the color-bar signal portion (26:00 to 28:00) of the alignment tape CR5-1B or CR5-1B PS. (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)

(2) Adjust the following RVs until disappear the drop-out parts (Y DO and C DO) of displaying color-bar on the video monitor.

Adjustment points: Y DO: ⊘RV401/TBC-24(F-6)
C DO: ⊘RV601/TBC-24(D-6)

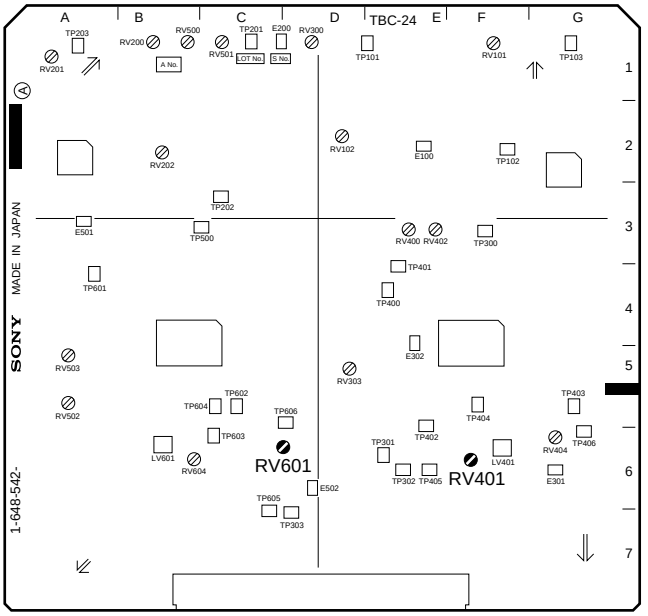
Specification: Refer to next figure.



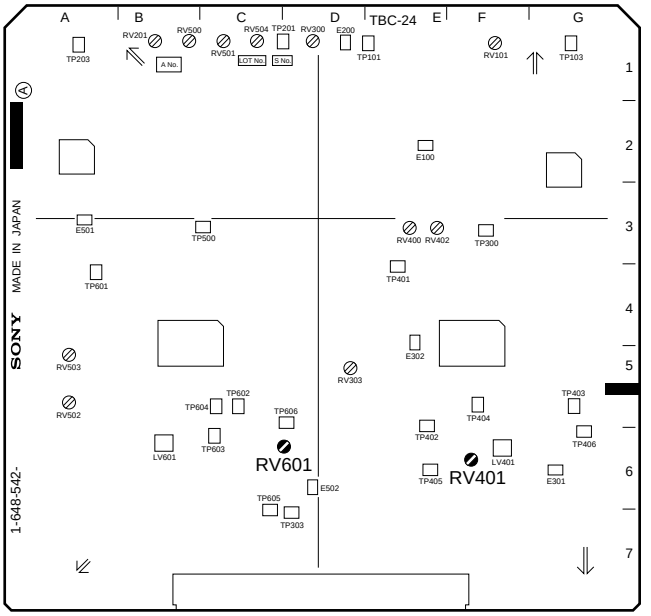
(3) Eject the alignment tape CR5-1B/CR5-1B PS.

Note

It is not necessary to eject the alignment tape when perform subsequent “8. TBC Y/C Delay Adjustment”.



TBC-24 Board (A Side) (Suffix-11 and -12)



TBC-24 Board (A Side) (Suffix-13 and higher)

8. TBC Y/C Delay Adjustment

Note

Perform this adjustment without using the extension board.

Measuring equipments: Composite waveform monitor

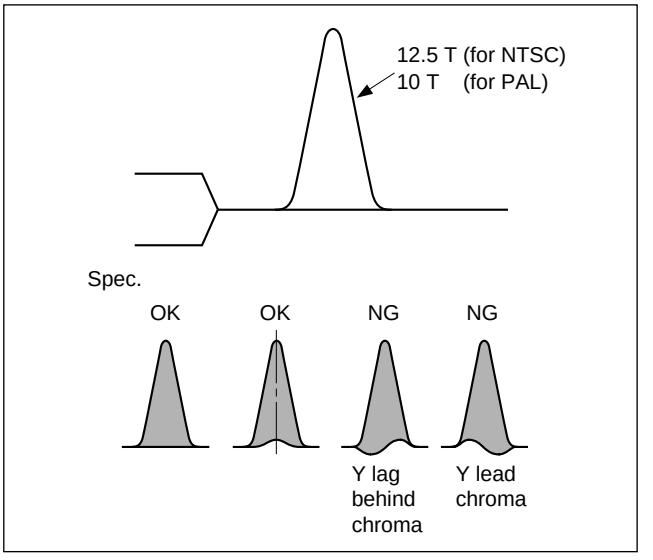
(1) Turn off the power of DNW.
(2) Disconnect the extension harness from TBC-23 board and TBC-24 board.
(3) Remove the TBC-24 board from the extension board, then pull out the extension board.
(4) Install the TBC-24 board to DNW.
(5) Connect originally harness to CN1 on TBC-24 board and CN1 on TBC-23 board.
(6) Turn on the power.
(7) Set the composite waveform monitor to BOWTIE mode.

METAL adjustment [to step (10)]

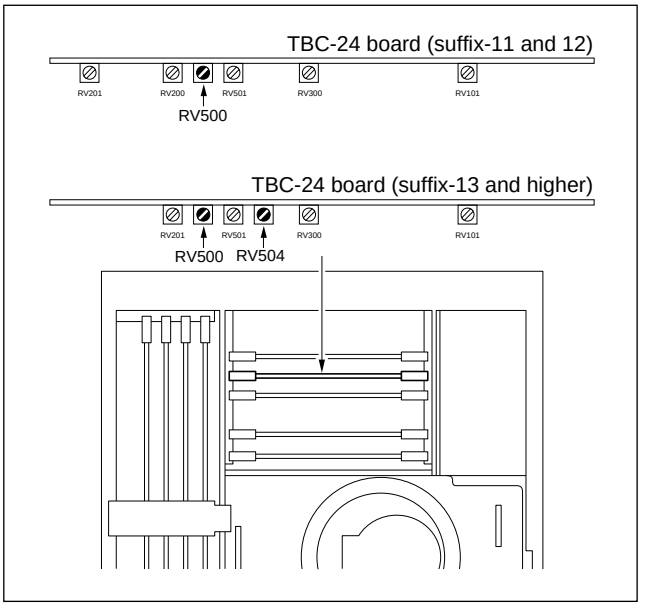
(8) Playback the bowtie signal portion (17:00 to 19:00) of the alignment tape CR5-1B or CR5-1B PS. (DNW-A22: CR5-1B, DNW-A22P: CR5-1B PS)
(9) Observe the 12.5T (PAL: 10T) portion of bowtie signal, adjust so that the waveform satisfies the specification.
Adjustment points: Field 1: ⊘RV500/TBC-24(B-1)
Field 2: ⊘RV504/TBC-24(C-1)

Note

RV504 is not equipped with the board number suffixes 11 and 12 of TBC-24 board.
Therefore, adjust RV500 only.



(10) Eject the alignment tape CR5-1B/CR5-1B PS.

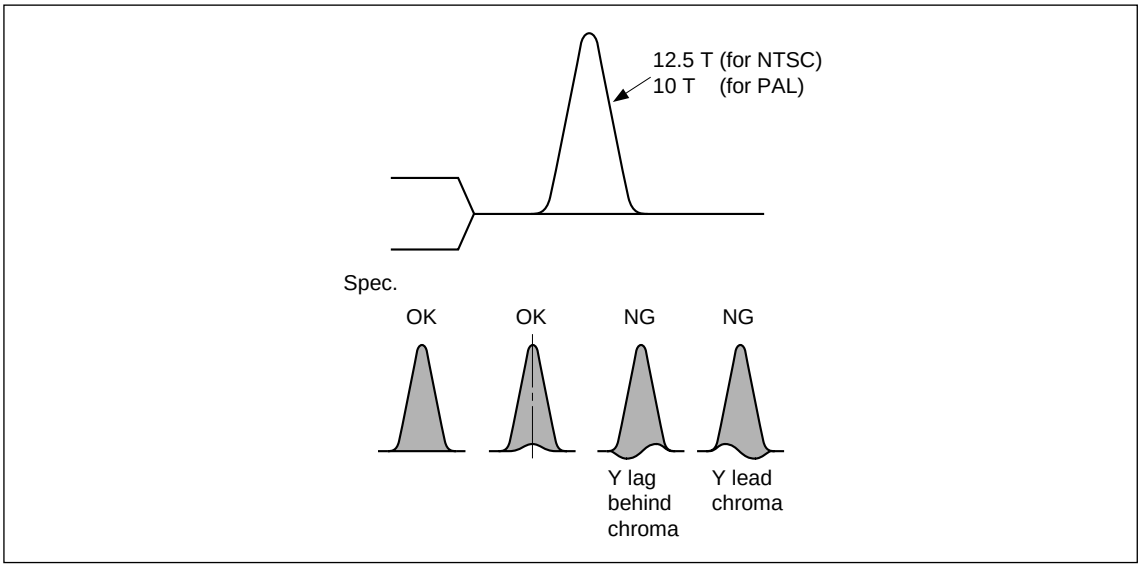


RV500 and RV504 on TBC-24 Board

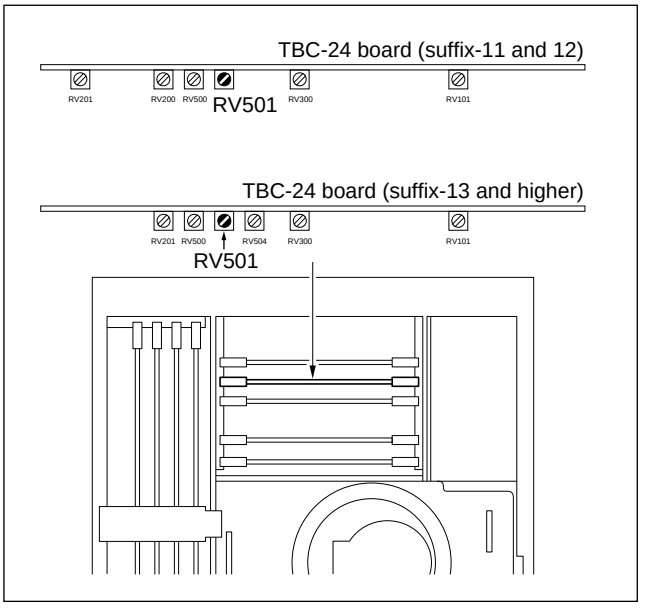
OXIDE adjustment [to step (13)]

(11) Playback the bowtie signal portion (6:00 to 9:00) of the alignment tape CR5-2A or CR5-2A PS. (DNW-A22: CR5-2A, DNW-A22P: CR5-2A PS)

(12) Observe the 12.5T (PAL: 10T) portion of bowtie signal, adjust so that the waveform satisfies the specification.
Adjustment point: ⊘RV501/TBC-24(C-1)



(13) Eject the alignment tape CR5-2A/CR5-2A PS.



RV501 on TBC-24 Board

6-8. VPR-17 Board Replacement

The electrical adjustments are essential after the VPR-17 board is replaced.

Note

When the VPR-17 board is replaced, the adjustments for both 525/60 and 625/50 line systems are required. Be sure to perform all adjustments to maintain the all functions even if that DNW is not carried out the 525/625 line system switching.
In the section 6-9, expresses the 525/60 and 625/50 line systems as follows:

Model	525/60 line system	625/50 line system
DNW-A22	Standard system	Another system
DNW-A22P	Another system	Standard system

To performed the electrical adjustments, the following equipment and fixtures are required

- Composite waveform/vector monitor
  For DNW-A22: TEKTRONIX 1750, 1780R, or equivalent
  For DNW-A22P: TEKTRONIX 1751, 1781R, or equivalent
- Oscilloscope: TEKTRONIX 2465B or equivalent
- Frequency counter: ADVANTEST TR5821AK or equivalent
- Extension board: EX-555 (SONY part No. A-8277-211-A)
- 75 Ω terminators (3 pcs.)
- 75 Ω BNC T adapter (1 pc.)
- Composite video monitor(s): Sony's BVM series, PVM series, etc.

Notes

- For NTSC (525/60 line system) and PAL (625/50 line system) are required.
- Having the switchable monitor of the NTSC and PAL is a convenience.

6-8-1. Replacement Procedure

Note

Turn off the POWER switch before starting the replacement.

(1) Remove the upper lid and board retainer(L). (Refer to "6-1-3. Plug-in Board Pulling out/Insertion".)
(2) Replace the VPR-17 board. (Refer to Section 6-1-3.)
(3) Perform the electrical adjustments (Section 6-8-2).
Note
The extension board is used some part of the electrical adjustments.
(4) Return the states of S1100-1 on the SS-63 board, control panels, and connector panel to their previous states.
(5) Turn off the POWER switch.
(6) Install the board retainer(L) and upper lid. (Refer to Section 6-1-3.)

6-8-2. Electrical Adjustments

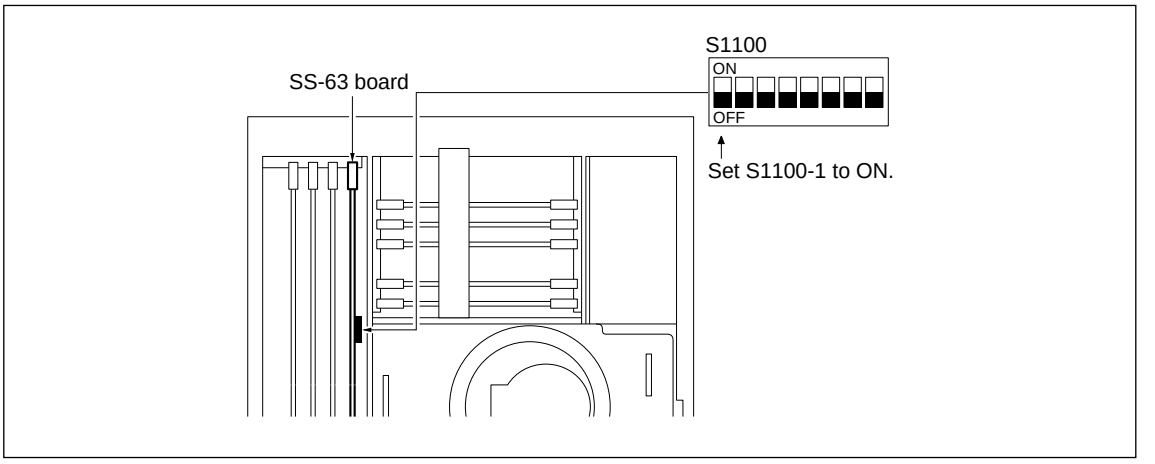
Adjustment Items

No.	Item		Adjustment point	Notes
0	Preparation			
1	Composite video output level adjustment			
		CH1	A20 : VPR VR : VIDEO 1	VIDEO OUTPUT COMPOSITE 1
		CH2	A20 : VPR VR : VIDEO 2	VIDEO OUTPUT COMPOSITE 2
		Data save	A2F : NV-RAM CONTROL	
2	Standard system completion			
3	Preparation (Another system)			
4	Composite video output level adjustment (Another system)			
		CH1	A20 : VPR VR : VIDEO 1	VIDEO OUTPUT COMPOSITE 1
		CH2	A20 : VPR VR : VIDEO 2	VIDEO OUTPUT COMPOSITE 2
		Data save	A2F : NV-RAM CONTROL	
5	Another system completion			

0. Preparation

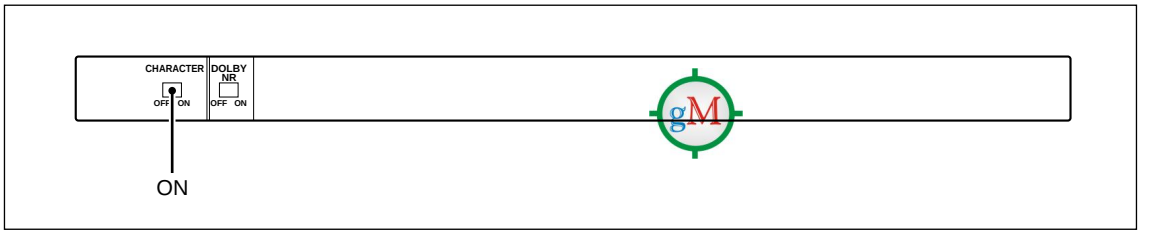
Setting of DNW

(1) Set S1100-1 on SS-63 board to ON to treat the extended menu of the setup menu.



S1100 on SS-63 Board

(2) Set the sub control and connector panels as shown below.



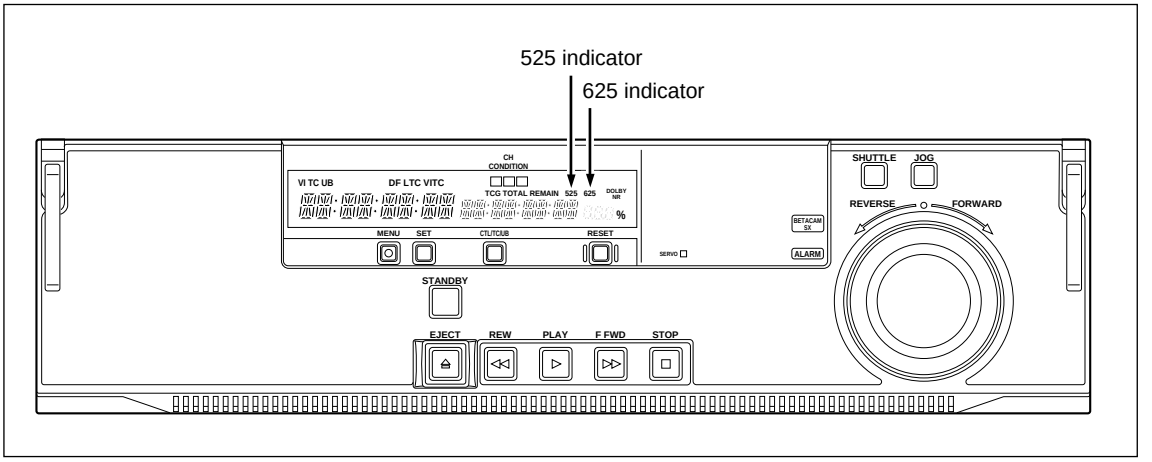
Sub Control Panel

(3) Turn on the POWER switch of DNW, then confirm that the operation system is in the standard system.

Note

The operation system can confirm with the 525 or 625 indicator on the lower control panel.
If DNW is under another system, return it to the standard system with the setup menu ITEM-013 : 525/625 SYSTEM SELECT. (Refer to Section 7-2-2 in the operation manual.)

Model	Standard system	Another system
DNW-A22	Lights 525 indicator	Lights 625 indicator
DNW-A22P	Lights 625 indicator	Lights 525 indicator



Lower Control Panel

For the maintenance mode

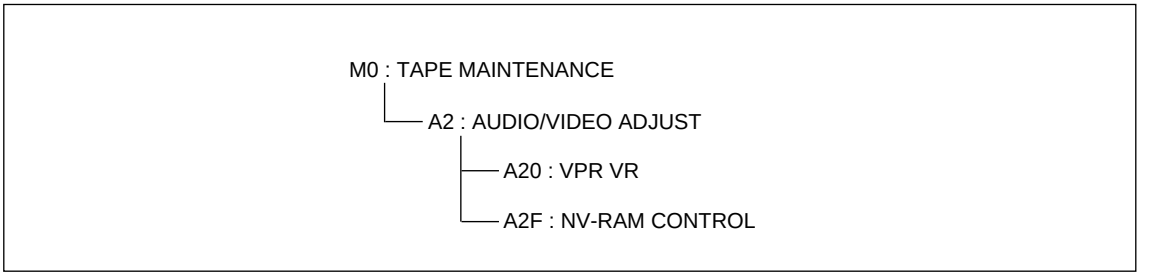
Describes the operation of the maintenance mode as follows:

• How to enter the maintenance mode

Push S1101 (G-1) on the SS-63 board.

Note

The sub modes and menus of the maintenance mode that are used after replacing the VPR-17 are as shown below.



• How to enter the next menu

(1) Push the JOG button once. = **Search dial enters into JOG mode.**
(2) To set the cursor (∗ mark) to the desired menu (mode), turn the search dial.
(3) Push the SET button once.

• How to exit the current menu (mode)

Push the MENU button once.

Note

If the MENU button is pushed several times, the maintenance mode exits.

• How to change the data value

(1) To set the cursor (∗ mark) to the item, turn the search dial.
(2) Turn the search dial slowly while pressing the JOG button. = **Data value changes.**
REVERSE direction: decrease the data value (00's next is FF)
FORWARD direction: increase the data value (FF's next is 00)

Note

During adjustment, change the rotational direction of the search dial according to the change of waveform that is displayed on the measuring equipment.

• How to save the data

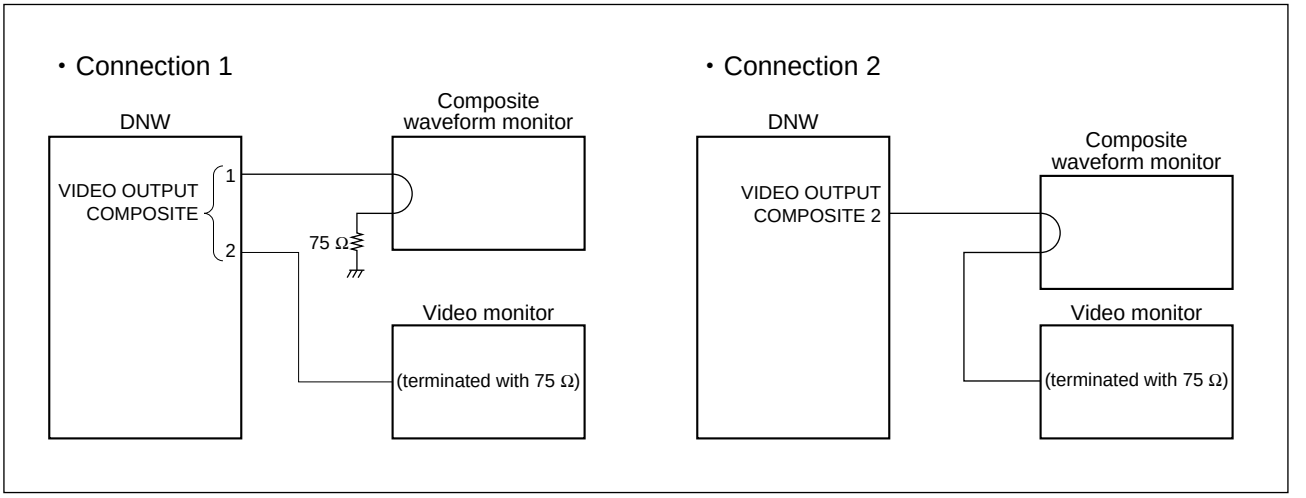
(1) To set the cursor (∗ mark) to A2F : NV-RAM CONTROL, turn the search dial.
(2) Push the SET button once.
(3) To set the cursor (∗ mark) to "SAVE ALL ADJUST DATA", turn the search dial.
(4) Push the SET button once.

1. Composite Video Output Level Adjustment

Note

More than 30 minutes should elapse after turning the power on, then perform the adjustment (confirmation).

Measuring equipment: Composite waveform monitor



(1) Connect the composite waveform monitor and video monitor as shown above figure's Connection 1.
(2) Playback the 100 % color-bar portion (0:00 to 10:00) of the alignment tape SR5-1 or SR5-1P
SR5-1: for DNW-A22
SR5-1P: for DNW-A22P
(3) To enter the maintenance mode, push S1101 (G-1) on the SS-63 board.
(4) Enter A2 : AUDIO/VIDEO ADJUST.
(5) Enter A20 : VPR VR.

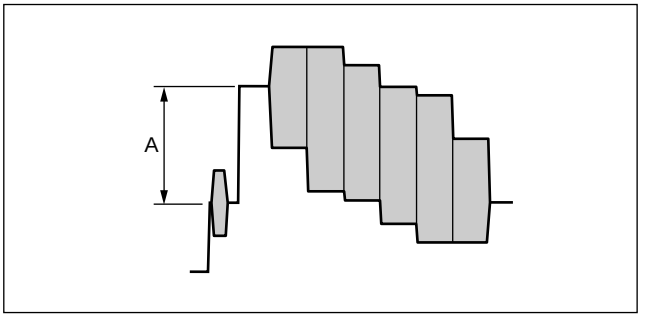
(6) Confirmation (Adjustment)

Connect the composite waveform monitor to each VIDEO OUTPUT COMPOSITE connector, confirm that the white peak level satisfy the specification.

If the specification is not satisfied, perform the adjustment.

- When confirming/adjusting the output of VIDEO OUTPUT COMPOSITE 2 connector, change the connection of the video monitor as Connection 2 on the opposite page.
- The picture of the maintenance mode is superimposed in the output of VIDEO OUTPUT COMPOSITE 2 connector. But, it is no problem to confirm the white peak level of the color bars signal.

Observation channel [Connection]	Adjustment point (A20 : VPR VR)	Specification for DNW-A22	Specification for DNW-A22P
COMPOSITE 1 [Connection 1]	VIDEO 1	A = 100 ±1 IRE	A = 700 ±7 mV
COMPOSITE 2 [Connection 2]	VIDEO 2	(A = 714 ±7 mV)	



(7) To exit the A20 : VPR VR, push the MENU button once.

(8) Eject the alignment tape.

When performing the adjustment in step (6), perform following steps (9) through (12).

(9) Data save

Enter A2F : NV-RAM CONTROL, then execute “SAVE ALL ADJUST DATA”.

(10) Check that the message “Save Complete” is displayed on the video monitor.

(11) To exit the A2F : NV-RAM CONTROL, push the MENU button once.

(12) To exit the maintenance mode, push the MENU button three times.

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2. Standard System Completion

(1) Turn off the POWER switch of DNW.
(2) Remove the VPR-17 board from the extension board, then pull out the extension board.
(3) Install the VPR-17 board .

3. Preparation (Another System)

(1) Turn on the POWER switch of DNW.
(2) Switch DNW to another system with the setup menu ITEM-013.
(Refer to Section 7-2-2 in the operation manual.)

Note

Another system for DNW-A22 is the 625/50 line system.
Another system for DNW-A22P is the 525/60 line system.

(3) Connect the video monitor corresponding to another system to VIDEO OUTPUT COMPOSITE 2 connector.
Or, when using the switchable video monitor of NTSC (525/60) and PAL (625/50), switch its system.
(4) Setup extended menu setting (Another system)
For DNW-A22: None.
For DNW-A22P:
Set the SUB-ITEMs of ITEM-709 and ITEM-713 as shown below.

Note

Return the SUB-ITEMs to their previous settings in “12. Another System Completion” (after adjustments in another system are completed) .

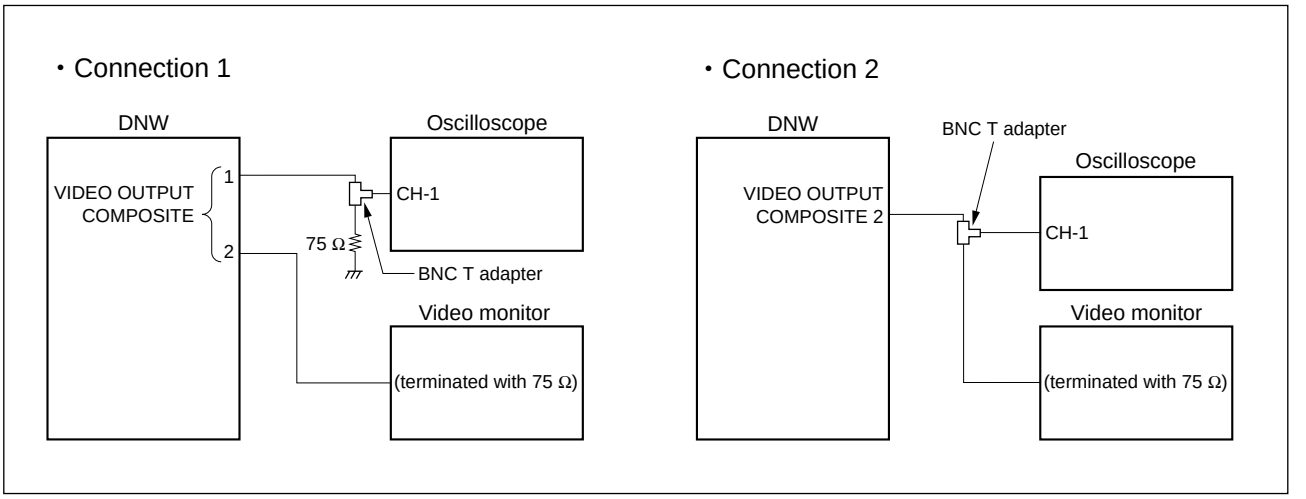
ITEM	SUB-ITEM	Setting Previous setting (fill up)
709 : CAV LEVEL FORMAT	1. OUTPUT CAV LEVEL	B-CAM
713 : VIDEO SETUP REFERENCE LEVEL	0. MASTER LEVEL	0.0%
	3. BETACAM PB LEVEL	MSTER
	4. OUTPUT LEVEL	MSTER

4. Composite Video Output Level Adjustment (Another System)

Measuring equipment: Oscilloscope (Band width limit: ON)

Note

If the composite waveform monitor corresponding to another system is available, be sure to use it.
In this case, the connection is the same connection as “1. Composite Video Output Level Adjustment”.



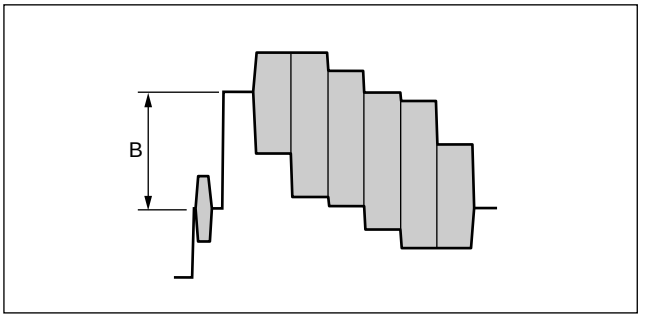
(1) Connect the oscilloscope (and video monitor) as shown above figure’s Connection 1.
(2) Set the oscilloscope as follows:
CH-1: DC 200 mV/DIV, 10 μs/DIV
Trigger: CH-1, – slope, coupling: LINE
(3) Playback the 100 % color-bar portion (0:00 to 10:00) of the alignment tape SR5-1 or SR-5-1P.
SR5-1: for DNW-A22P
SR5-1P: for DNW-A22
(4) To enter the maintenance mode, push S1101 (G-1) on the SS-63 board.
(5) Enter A2 : AUDIO/VIDEO ADJUST.
(6) Enter A20 : VPR VR.

(7) Confirmation (Adjustment)
Connect the Oscilloscope's CH-1 to each VIDEO OUTPUT COMPOSITE connector, confirm that the white peak level satisfy the specification.
If the specification is not satisfied, perform the adjustment.

Notes

- When confirming/adjusting the output of VIDEO OUTPUT COMPOSITE 2 connector, change the connection of the video monitor as Connection 2 on the opposite page.
- The picture of the maintenance mode is superimposed in the output of VIDEO OUTPUT COMPOSITE 2 connector. But, it is no problem to confirm the white peak level of the color bars signal.

Observation channel [Connection]	Adjustment point (A20 : VPR VR)	Specification for DNW-A22	Specification for DNW-A22P
COMPOSITE 1 [Connection 1]	VIDEO 1	B = 700 ±7 mV	B = 714 ±7 mV
COMPOSITE 2 [Connection 2]	VIDEO 2		



(8) To exit the A20 : VPR VR, push the MENU button once.
(9) Eject the alignment tape.

When performing the adjustment in step (7), perform following steps (10) through (13).
(10) Data save
Enter A2F : NV-RAM CONTROL, then execute "SAVE ALL ADJUST DATA".
(11) Check that the message "Save Complete" is displayed on the video monitor.
(12) To exit the A2F : NV-RAM CONTROL, push the MENU button once.

(13) To exit the maintenance mode, push the MENU button three times.

5. Another System Completion

(1) Setup extended menu resetting (Another system)
For DNW-A22: None.
For DNW-A22P:
Return the SUB-ITEMs of the setup extended menus ITEM-709 and ITEM-713 to their previous settings in another system.
(2) Return DNW to the standard system with setup extended menu ITEM-013.
(Refer to Section 7-2-2 in the operation manual.)

Note

Standard system for DNW-A22 is the 525/60 line system.
Standard system for DNW-A22P is the 625/50 line system.

Section 7
Spare Parts

7-1. Notes on Repair Parts

1. Safety Related Components Warning

Components marked ⚠ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

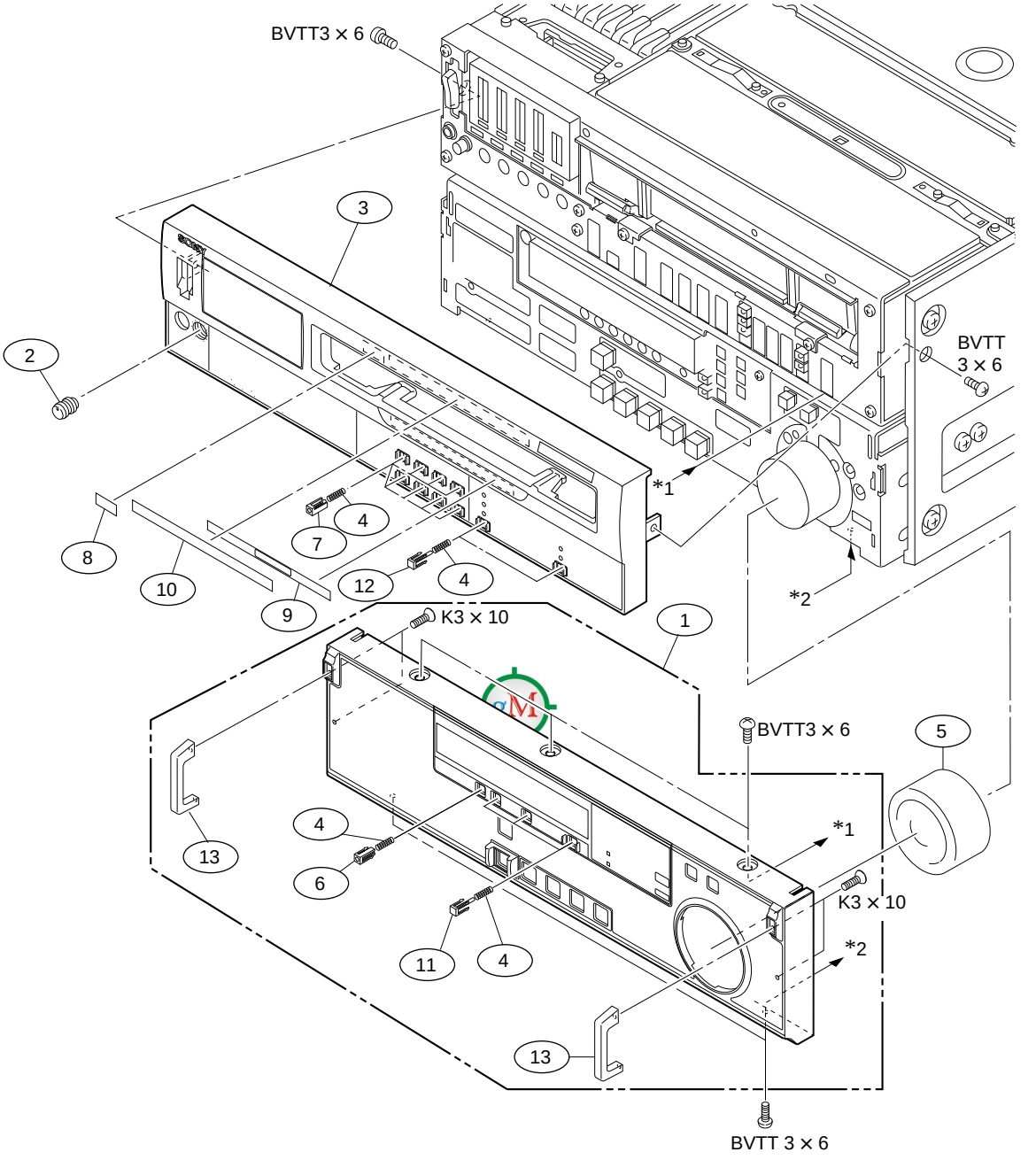
2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.
Parts list has the present standardized repair parts.

3. Stock of Parts

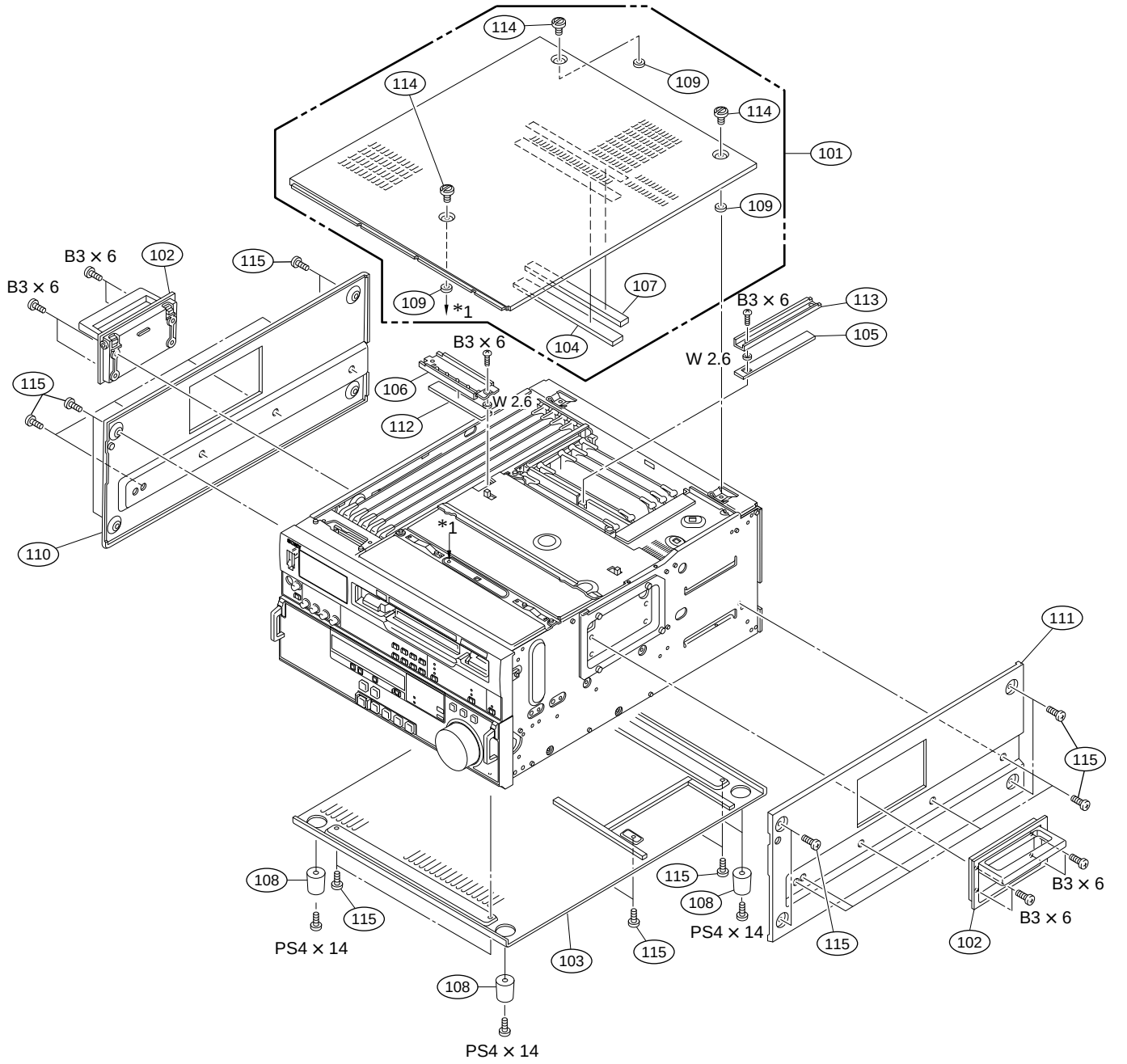
Parts marked with “o” at SP (Supply Code) column of the spare parts list may not be stocked. Therefore, the delivery date will be delayed.

7-2. Exploded Views



No.	Part No.	SP	Description
1	A-8278-612-C	o	PANEL ASSY, KEY
2	X-3167-825-1	o	KNOB ASSY(WHITE), VOL
3	X-3679-317-2	o	PANEL SUB ASSY, FRONT
4	2-217-533-00	s	SPRING, COMPRESSION
5	3-180-633-04	s	RUBBER, DIAL KNOB
6	3-180-822-03	s	KEY TOP, 6X6(LED,BLACK)
7	3-180-822-11	s	KEY TOP, 6X6(LED,GRAY)
8	3-184-994-02	o	ISR STICKER (S)
9	3-604-813-02	o	A/D LABEL
10	3-608-553-01	o	LABEL, MODEL NUMBER(for NTSC)
	3-608-552-01	o	LABEL, MODEL NUMBER(for PAL)

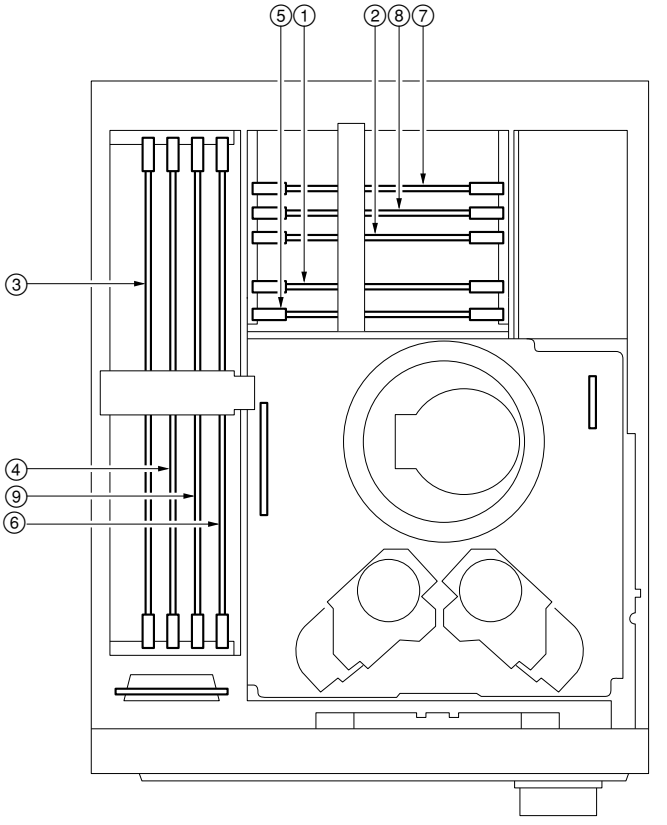
No.	Part No.	SP	Description
11	3-696-774-01	s	KEY TOP, 6X6(BLACK)
12	3-696-774-11	s	KEY TOP, 6X6(GRAY)
13	3-717-425-31	o	HANDLE
	7-685-247-19	s	SCREW +K 3X10 TAPPING TYPE2
	7-685-871-09	s	SCREW +BVTT 3X6(S)



No	Part No.	SP	Description
101	A-8278-584-A	o	LID ASSY, UPPER
102	X-3642-018-3	o	HANDLE ASSY
103	X-3678-563-3	o	PLATE ASSY, BOTTOM
104	3-171-369-02	o	LID(A), UPPER, AIR GUARD
105	3-171-410-01	o	RETAINER(S), PC BOARD(CUSHION)
106	3-180-641-01	o	PLATE(L), PC BOARD RETAINER
107	3-604-811-01	o	LID(B), UPPER, AIR GUARD
108	3-604-930-01	s	FOOT, RUBBER
109	3-688-102-01	o	SPACER, M4
110	3-696-847-02	o	CABINET (LEFT)
111	3-696-854-01	o	RIGHT CABINET
112	3-696-882-02	o	CUSHION(L), PC BOARD RETAINER
113	3-696-887-01	o	RETAINER (S), PC BOARD
114	3-717-392-02	o	SCREW, LID
115	3-733-690-01	s	SCREW, +B 4X6
	7-623-923-01	s	WASHER 2.6, NYLON
	7-682-547-09	s	SCREW +B 3X6
	7-682-664-01	s	SCREW +PS 4X14

7-3. Plug-in Boards

No.	Board name	Part No.	SP	Description
1	APR-12	A-8315-610-A	o	MOUNTED CIRCUIT BOARD, APR-12F (for NTSC)
		A-8315-691-A	o	MOUNTED CIRCUIT BOARD, APR-12FP (for PAL)
2	DM-89	A-8312-743-A	o	MOUNTED CIRCUIT BOARD, DPR-71D
3	DPR-71	A-8312-743-A	o	MOUNTED CIRCUIT BOARD, DPR-71D
4	DPR-73	A-8315-614-A	o	MOUNTED CIRCUIT BOARD, DPR-73F
5	EQ-56	A-8315-169-A	o	MOUNTED CIRCUIT BOARD, EQ-56F
6	SS-63	A-8273-560-A	o	MOUNTED CIRCUIT BOARD, SS-63
7	TBC-23	A-8275-155-B	o	MOUNTED CIRCUIT BOARD, TBC-23 (for NTSC)
		A-8275-271-B	o	MOUNTED CIRCUIT BOARD, TBC-23PG (for PAL)
8	TBC-24	A-8275-156-A	o	MOUNTED CIRCUIT BOARD, TBC-24 (for NTSC)
		A-8275-087-A	o	MOUNTED CIRCUIT BOARD, TBC-24P (for PAL)
9	VPR-17	A-8315-612-A	o	MOUNTED CIRCUIT BOARD, VPR-17F (for NTSC)
		A-8315-693-A	o	MOUNTED CIRCUIT BOARD, VPR-17FP (for PAL)



< Top View >

7-4. Packing Materials and Supplied Accessories

Ref. No. or Q'ty	Part No.	SP	Description
4pcs	7-682-965-01	s	SCREW +PSW 4X16

7-5. Fixtures List

Part No.	SP	Description
J-6035-070-A	o	EXTRACTION TOOL (for PLCC socket)
J-6080-029-A	o	SMALL DENTAL MIRROR (Round type ø12)
J-6086-570-A	o	REFERENCE FLAT PLATE
J-6152-450-A	o	WIRE CLEARANCE CHECK GAUGE SET
J-6251-090-A	o	TORQUE SCREWDRIVER'S HEXAGONAL BIT (d=2.5 mm, l=120 mm)
J-6323-440-A	o	TORQUE SCREWDRIVER'S HEXAGONAL BIT (d=0.89 mm, l=50 mm)
J-6323-420-A	o	TORQUE SCREWDRIVER'S BIT (+2 mm, l=75 mm)
J-6323-430-A	o	TORQUE SCREWDRIVER'S BIT (+3 mm, l=50 mm)
J-6252-510-A	o	TORQUE SCREWDRIVER (6 kg•cm) (0.6 N•m)
J-6252-520-A	o	TORQUE SCREWDRIVER (12 kg•cm) (1.2 N•m)
J-6269-810-A	o	EXTENSION BOARD (S), EX-377
A-8277-211-A	o	EXTENSION BOARD (L), EX-555
A-8277-212-A	o	EXTENSION BOARD (S), EX-556
J-6320-870-A	o	REEL MOTOR SHAFT SLANTNESS CHECK FIXTURE
J-6320-880-A	o	CASSETTE REFERENCE PLATE (L)
J-6322-610-A	o	TAPE GUIDE ADJUSTMENT DRIVER
J-6329-350-A	o	REEL TABLE HEIGHT GAUGE
1-952-684-11	o	EXTENSION CABLE (14P)
1-957-071-11	o	EXTENSION CABLE SET
3-184-527-01	o	CLEANING CLOTH (15 cmX15 cm)
7-432-114-11	o	LOCKING COMPOUND, 1401B (200 g)
7-661-018-18	o	DIAMOND OIL, NT-68 (50 ml)
7-651-000-10	o	SONY GREASE, SGL-601 (50 g)
7-700-736-01	o	L-SHAPED HEXAGONAL WRENCH (d=1.27 mm)
7-700-736-05	o	L-SHAPED HEXAGONAL WRENCH (d=1.5 mm)
7-700-736-06	o	L-SHAPED HEXAGONAL WRENCH (d=0.89 mm)
7-700-766-04	o	HEXAGONAL WRENCH DRIVER (d=2.5 mm)
8-960-075-01	o	ALIGNMENT TAPE, SR5-1 (for 525/60 system)
8-960-075-11	o	ALIGNMENT TAPE, SR2-1 (for 525/60 system)
8-960-075-51	o	ALIGNMENT TAPE, SR5-1P (for 625/50 system)
8-960-075-61	o	ALIGNMENT TAPE, SR2-1P (for 625/50 system)
8-960-096-01	o	ALIGNMENT TAPE, CR2-1B (for NTSC)
8-960-096-41	o	ALIGNMENT TAPE, CR5-1B (METAL PARTICLE TAPE) (for NTSC)
8-960-096-51	o	ALIGNMENT TAPE, CR2-1B PS (for PAL)
8-960-097-44	o	ALIGNMENT TAPE, CR5-2A (OXIDE TAPE) (for NTSC)
8-960-097-45	o	ALIGNMENT TAPE, CR8-1A (OXIDE TAPE) (for NTSC)
8-960-096-91	o	ALIGNMENT TAPE, CR5-1B PS (METAL PARTICLE TAPE) (for PAL)
8-960-096-86	o	ALIGNMENT TAPE, CR8-1B PS (METAL PARTICLE TAPE) (for PAL)
8-960-098-44	o	ALIGNMENT TAPE, CR5-2A PS (OXIDE TAPE) (for PAL)
8-960-098-45	o	ALIGNMENT TAPE, CR8-1A PS (OXIDE TAPE) (for PAL)
9-911-053-00	o	THICKNESS GAUGE
9-919-573-01	o	CLEANING LIQUID
J-6332-240-A	o	VISC PHASE ADJUSTING TOOL (for PAL)

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Appendix A
Setting Check Sheet

It is reccomended to copy these check sheets and write down the setup conditions (switch and so on) under the application.
If the setting is changed temporarily by changing operating condition, the setting can be reset easily.
It is recommended to attach the sheets to the unit when check, maintenance and repair.
If the unit is used frequently by changing the combination of each system, making the sheets are convenient.
(Make use of the check sheets in prevention of setting error.)

Model name: DNW-_____ Serial No.: _____

- Software

  SYS1 ROM version: _____
  SYS2 ROM version: _____
  SV1 ROM version: _____

- RS-232 baud rate: _____ bps Flow control: ☐ H/W
  ☐ XOFF(XON/XOFF)

- Hours meter

  Write down the value of hours meter when checking, servicing and maintaining.

ITEM	Date	Hours meter
H01: OPERATION HOURS	/	
H02: DRUM RUNNING HOURS	/	
H03: TAPE RUNNING HOURS	/	
H04: THREADING COUNTER	/	
H12: DRUM RUNNING HOURS(Resettable)	/	
H13: TAPE RUNNING HOURS(Resettable)	/	
H14: THREADING COUNTER(Resettable)	/	
H15: AIRFILTER OPERATION HOURS(Resettable)	/	

Upper control panel

Switch		Factory setting	Setting			
AUDIO MONITOR	L	CH-1	☐ CH-1	☐ CH-2	☐ CH-3	☐ CH-4
	R	CH-2	☐ CH-1	☐ CH-2	☐ CH-3	☐ CH-4
TC		LTC	☐ LTC		☐ VITC	
DF/NDF		DF	☐ DF	☐ NDF		

Sub control panel

Switch	Factory setting	Setting	
CHARACTER	ON	☐ OFF	☐ ON
DOLBY NR	ON	☐ OFF	☐ ON

Short plugs on the board

Note Never change the setting of Factory use switches.

Board	Name		Ref.No./channel	Factory setting	Setting
APR-12	Audio input headroom		COR101/CH1	20 dB	
			COR201/CH2	20 dB	
	Monitor output level	L	COR302	+4 dBm/600 Ω	
		R	COR402	+4 dBm/600 Ω	
	Monitor output headroom	L	COR300	20 dB	
		R	COR400	20 dB	
	Variable monitor output level	L	COR301	Fixed (UNITY)	
		R	COR401	Fixed (UNITY)	
	HEAD TUNE Switch		S500/CH1	Factory use	–
			S600/CH2	Factory use	–
SS-63	Factory use		COR100	OPEN	–
	Factory use		COR101	OPEN	–
	Factory use		COR102	OPEN	–
	Factory use		COR103	SHORT*1	–
	Factory use		COR104	SHORT*1	–

*1: COR103 and 104 have no plug, but are shorted by pattern.

Switches on the board

Note Never change the setting of Factory use switches.

Board	Switch No.: Name				Factory setting	Setting
DM-89	S101		: Y-RF LPF & EQ TEST		NORMAL POSITION	
	S102		: Factory use		NORMAL POSITION	
	S301		: C-RF LPF & EQ TEST		NORMAL POSITION	
	S302		: Factory use		NORMAL POSITION	–
	S501		: Factory use		ON	–
	S901	1	: RF adjusting switch		OFF (OPEN)	
		2	: Factory use		OFF (OPEN)	–
		3	: Factory use		OFF (OPEN)	–
		4	: Factory use		OFF (OPEN)	–
TBC-23	S1	1	: Y MUTE		OFF (OPEN)	
		2	: C MUTE		OFF (OPEN)	
		3	: Factory use		OFF (OPEN)	–
		4	: Factory use		OFF (OPEN)	–
		5	: COMB		OFF (OPEN)	
		6	: TBC TEST		OFF (OPEN)	
		7	: Factory use		OFF (OPEN)	–
		8	: VIDEO PHASE		OFF (OPEN)	
	S500	1 – 4	: Factory use		OFF (OPEN)	–
SS-63	S101	1*2	: FLASH MEMORY		OFF (OPEN)	–
		2	: ANA AUTO-TRACKING		ON (CLOSE)	
		3	: ANA DISABLE		OFF (OPEN)	
		4*3	: SV ERR DISABLE		OFF (OPEN)	–
	S1100	1	: EXTENDED MENU		OFF (OPEN)	
		2	: MAINTE MODE ACCESS		OFF (OPEN)	
		3 – 8	: Factory use		OFF (OPEN)	–
	S1102	Never change the settings of S1102 switch since each switch is set according to the characteristics of the unit.				
		1 – 6	: Model ID switch	1:	OFF (OPEN)	–
				2:	OFF (OPEN)	–
				3:	OFF (OPEN)	–
				4:	ON (CLOSE)	–
				5:	ON (CLOSE)	–
				6:	OFF (OPEN)	–
		7	: J/SY		ON (CLOSE)	
		8	: 525/625	DNW-A22:	OFF (OPEN)	
				DNW-A22P:	ON (CLOSE)	
	S1900	1 – 8	: Factory use		OFF (OPEN)	–

*2, *3: Never change the switches S101-1 and S101-4.

For 525/60 system

Set up menu

Note When Bank 1 to 4 menu is recalled, the current menu will be overwritten.
Be sure to check the current menu first, before recall Bank 1 to 4.

• Main menu

ITEM-000 series: Operational parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
002: CHARACTER H-POSITION	14					
003: CHARACTER V-POSITION	56					
005: DISPLAY INFORMATION SELECT	T&STA					
007: TAPE TIMER DISPLAY	+–12H					
009: CHARACTER TYPE	WHITE					
011: CHARACTER V-SIZE	×1					
013※4: 525/625 SYSTEM SELECT	OFF	–	–	–	–	–

※4: ITEM013 is no relation with Bank.

ITEM-B00 series: Menu bank parameter

This series is not necessary to write down the setting.
B00 series is OFF on the normal state. Set to ON only when ITEM is carried out. After finishing,
B00 series retern to OFF autmatically.

ITEM	Factory setting
B01: RECALL BANK 1	OFF
B02: RECALL BANK 2	OFF
B03: RECALL BANK 3	OFF
B04: RECALL BANK 4	OFF
B11: SAVE BANK 1	OFF
B12: SAVE BANK 2	OFF
B13: SAVE BANK 3	OFF
B14: SAVE BANK 4	OFF
B20: RESET SETUP	OFF

• Extended menu

ITEM-100 series: Operational panel parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
101: SELECTION FOR SEARCH DIAL ENABLE	DIAL					
102: MAXIMUM TAPE SPEED	MAX					
104: AUDIO MUTING TIME	OFF					
320: AUDIO PB PROC	FADE IN/OUT					

ITEM-300 series: Editing parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
320: AUDIO PB PROCESS IN EDIT POINT	FADE					

ITEM-500 series: Tape protection parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
501: STILL TIMER	8M					

ITEM-700 series: Video control parameter

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
703: BLANK LINE SELECT							
SUB-ITEM	0: All line	–––					
	12: 12 line	BLANK					
	13: 13 line	BLANK					
	14: 14 line	BLANK					
	15: 15 line	BLANK					
	16: 16 line	BLANK					
	17: 17 line	BLANK					
	18: 18 line	BLANK					
	19: 19 line	BLANK					
	20: 20 line	BLANK					

ITEM-800 series: Audio control parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
802: DIGITAL AUDIO MUTE IN SHUTTLE MODE	OFF					
805: AUDIO MONITOR OUTPUT MIXING	RMS					

ITEM-F00 series: Adjustment use only

This series is not necessary to setting.
In the normal operation, use the factory settings.

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
F01: AUDIO NR IN SP MODE	ON					
F02: EMERGNECY TAPE PROTECTION	ENA					
F13: TRACKING CONTROL VIA SEARCH DIAL	OFF					
F16: DEVICE TYPE MODIFY	0					
F34: STOP PINCH OFF TIME	5MIN					

625/50 system

Set up menu

Note When Bank 1 to 4 menu is recalled, the current menu will be overwritten.
Be sure to check the current menu first, before recall Bank 1 to 4.

- **Main menu**

ITEM-000 series: Operational parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
002: CHARACTER H-POSITION	12					
003: CHARACTER V-POSITION	6A					
005: DISPLAY INFORMATION SELECT	T&STA					
007: TAPE TIMER DISPLAY	+–12H					
009: CHARACTER TYPE	WHITE					
011: CHARACTER V-SIZE	×1					
013※4: 525/625 SYSTEM SELECT	OFF	–	–	–	–	–

※4: ITEM013 is no relation with Bank.

ITEM-B00 series: Menu bank parameter

This series is not necessary to write down the setting.
B00 series is OFF on the normal state. Set to ON only when ITEM is carried out. After finishing, B00 series retern to OFF autmatically.

ITEM	Factory setting
B01: RECALL BANK 1	OFF
B02: RECALL BANK 2	OFF
B03: RECALL BANK 3	OFF
B04: RECALL BANK 4	OFF
B11: SAVE BANK 1	OFF
B12: SAVE BANK 2	OFF
B13: SAVE BANK 3	OFF
B14: SAVE BANK 4	OFF
B20: RESET SETUP	OFF

- **Extended menu**

ITEM-100 series: Operational panel parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
101: SELECTION FOR SEARCH DIAL ENABLE	DIAL					
102: MAXIMUM TAPE SPEED	MAX					
104: AUDIO MUTING TIME	OFF					
320: AUDIO PB PROC	FADE IN/OUT					

ITEM-300 series: Editing parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
320: AUDIO PB PROCESS IN EDIT POINT	FADE					

ITEM-500 series: Tape protection parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
501: STILL TIMER	8M					

ITEM-700 series: Video control parameter

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
703: BLANK LINE SELECT							
SUB-ITEM	0: All line	–––					
	9: 9,322 line	BLANK					
	10: 10,323 line	BLANK					
	11: 11,324 line	BLANK					
	12: 12,325 line	BLANK					
	13: 13,326 line	BLANK					
	14: 14,327 line	BLANK					
	15: 15,328 line	BLANK					
	16: 16,329 line	BLANK					
	17: 17,330 line	BLANK					
	18: 18,331 line	BLANK					
	19: 19,332 line	BLANK					
	20: 20,333 line	BLANK					
	21: 21,334 line	BLANK					
	22: 22,335 line	BLANK					
	23: 23 line	HALF					

ITEM-800 series: Audio control parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
802: DIGITAL AUDIO MUTE IN SHUTTLE MODE	OFF					
805: AUDIO MONITOR OUTPUT MIXING	RMS					

ITEM-F00 series: Adjustment use only

This series is not necessary to setting.
In the normal operation, use the factory settings.

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
F01: AUDIO NR IN SP MODE	ON					
F02: EMERGNECY TAPE PROTECTION	ENA					
F13: TRACKING CONTROL VIA SEARCH DIAL	OFF					
F16: DEVICE TYPE MODIFY	0					
F34: STOP PINCH OFF TIME	5MIN					

Appendix B
Block Diagrams

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OVERALL (2/2) Servo/System Control system B-5

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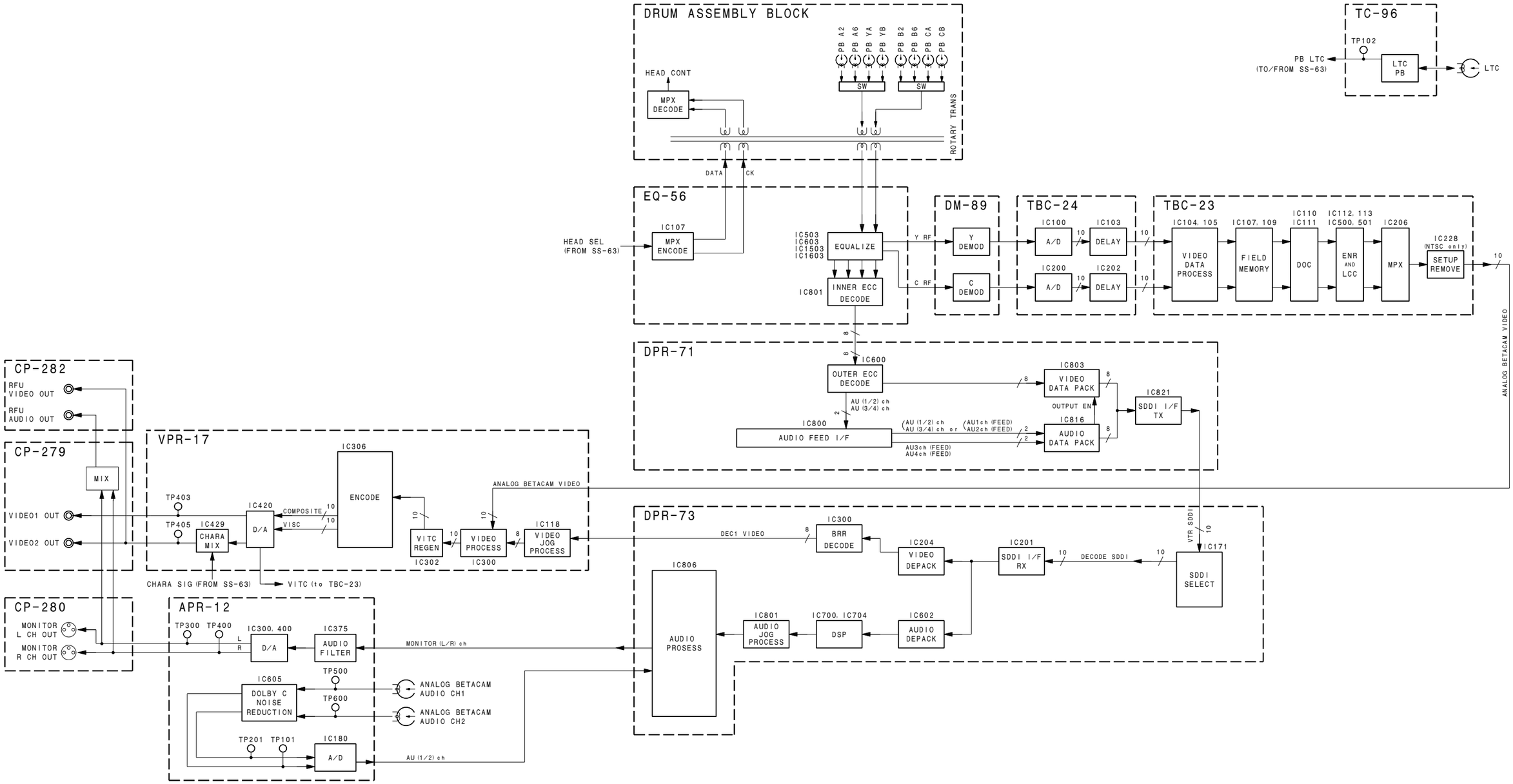
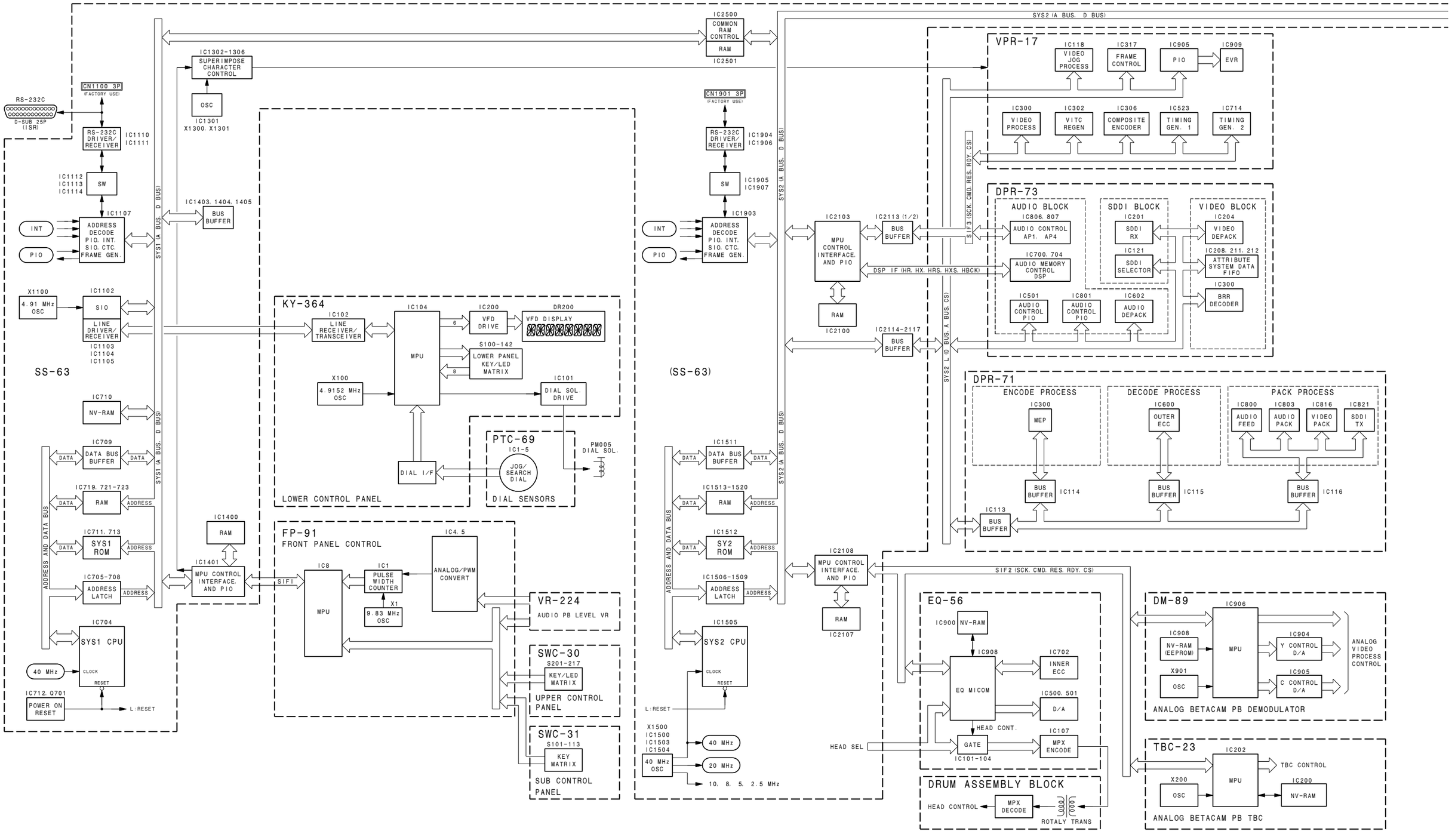


SIGNAL PROCESSING SYSTEM
OVERALL (1/2)
DNW-A22/A22P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RS-232C
D-SUB 25P (ISR)
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RS-232C DRIVER/ RECEIVER
IC1110 IC1111
IC1112 IC1113 IC1114
SW
IC1107
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SYS1 (A BUS. D BUS)
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IC1400
RAM
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MPU CONTROL INTERFACE. AND PIO
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IC200
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COMMON RAM CONTROL
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RS-232C DRIVER/ RECEIVER
IC1904 IC1906
SW
IC1905 IC1907
IC1903
INT
PIO
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IC1511
DATA BUS BUFFER
IC1513-1520
RAM
IC1512
SY2 ROM
IC1506-1509
ADDRESS LATCH
IC1505
SYS2 CPU
CLOCK
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X1500
IC1500
IC1503
IC1504
40 MHz OSC
40 MHz
20 MHz
10. 8. 5. 2.5 MHz
SYS2 (A BUS. D BUS)
SYS2 (B BUS. A BUS. CS)
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MPU CONTROL INTERFACE. AND PIO
IC2113 (1/2)
BUS BUFFER
DSP I/F (HR. HX. HRS. HXS. HBCK)
RAM
IC2100
IC2114-2117
BUS BUFFER
VPR-17
IC118
VIDEO JOG PROCESS
IC317
FRAME CONTROL
IC905
PIO
IC909
EVR
IC300
VIDEO PROCESS
IC302
VITC REGEN
IC306
COMPOSITE ENCODER
IC523
TIMING GEN. 1
IC714
TIMING GEN. 2
DPR-73
AUDIO BLOCK
IC806. 807
AUDIO CONTROL AP1. AP4
IC700. 704
AUDIO MEMORY CONTROL DSP
IC501
AUDIO CONTROL PIO
IC801
AUDIO CONTROL PIO
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SDDI BLOCK
IC201
SDDI RX
IC121
SDDI SELECTOR
VIDEO BLOCK
IC204
VIDEO DEPACK
IC208. 211. 212
ATTRIBUTE SYSTEM DATA FIFO
IC300
BRR DECODER
DPR-71
ENCODE PROCESS
IC300
MEP
DECODE PROCESS
IC600
OUTER ECC
PACK PROCESS
IC800
AUDIO FEED
IC803
AUDIO PACK
IC816
VIDEO PACK
IC821
SDDI TX
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IC114
BUS BUFFER
IC115
BUS BUFFER
IC116
IC113
BUS BUFFER
IC2108
MPU CONTROL INTERFACE. AND PIO
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IC702
INNER ECC
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HEAD CONT.
GATE
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IC107
MPX ENCODE
DRUM ASSEMBLY BLOCK
HEAD CONTROL
MPX DECODE
ROTALY TRANS
DM-89
IC906
MPU
IC908
NV-RAM (EEPROM)
X901
OSC
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Y CONTROL D/A
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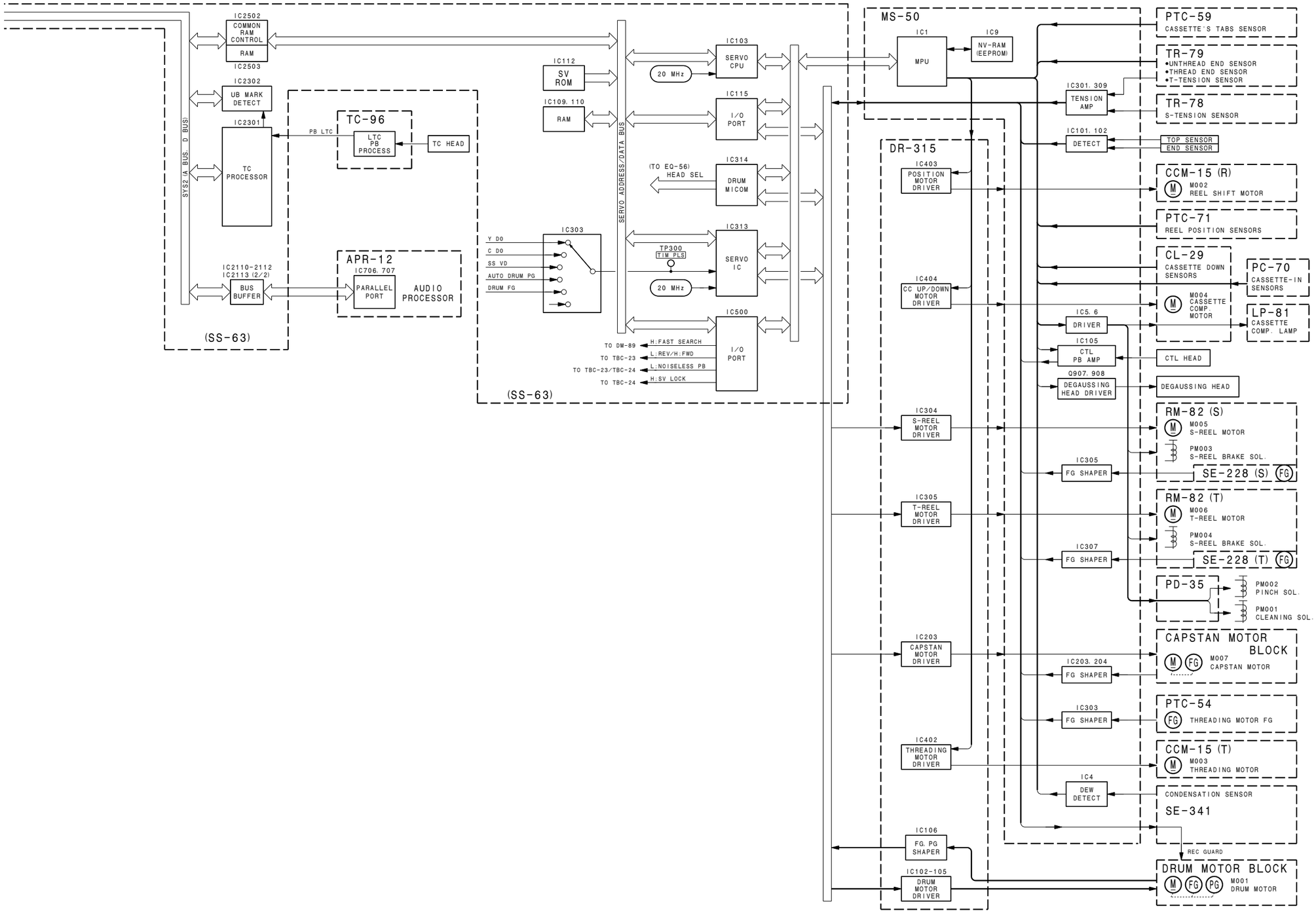
ANALOG BETACAM PB DEMODULATOR
TBC-23
IC202
MPU
X200
OSC
TBC CONTROL
IC200
NV-RAM
ANALOG BETACAM PB TBC

OVERALL (2/2) Block Diagram



SERVO/SYSTEM CONTROL SYSTEM

OVERALL (2/2)

DNW-A22/A22P

B-5

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For the U.S.A. and Canada

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer :

Check the metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA. Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

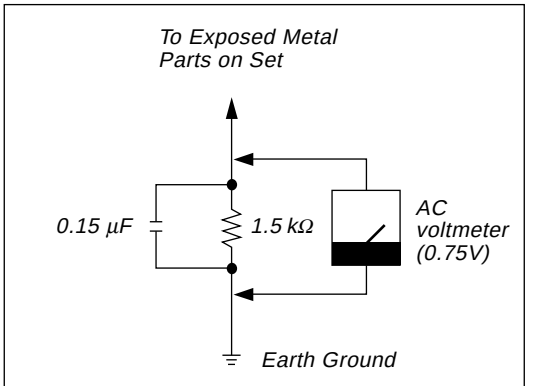

Fig A. Using an AC voltmeter to check AC leakage.

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DNW-A22P (SY) E
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